Sunny Portal
Photovoltaic Plant Monitoring and Visualization

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1 Notes on Using these Instructions

In order to ensure optimal use of these instructions, please note the following explanation of symbols used.

Symbols Used

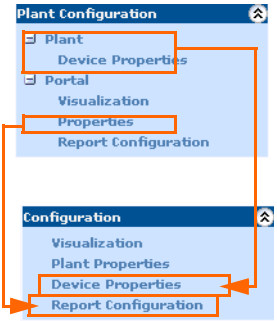
This symbol indicates a note which, if ignored, will make the procedure or operation more difficult.

2 Sunny Portal

2.1 What's New?

- Create users (in expert mode only)
  The new "User Management" menu option lets you set up additional users, who can then log on to your Sunny Portal page. You can define user rights.
  - See section “User Management" on page 129.

- Configuration
  The "Configuration/System/Properties menu option has been changed to "Configuration/Device Properties" (see figure).

  The "Configuration/Portal/Properties menu option has been changed to "Configuration/System Properties (see figure). You can now enter your operator data as the system operator for system data.
  - See section “System Settings" on page 73.
  - See section “Device Settings" on page 85.

- Create standard pages individually
  You can now use page configuration to create standard pages individually. Additional standard pages are available to prepare for our new Sunny SensorBox product.
  - See section “System-specific Standard Pages" on page 60.

- Enter string connections
  The "Device Properties" menu option now also lets you enter string connections for string inverters.
  - See section “Setting the String Connections" on page 92.

- New calculated channels
  The new "Specific System Yield" calculated channel is now available for calculating the specific system yield. The new "Performance Ratio" calculated channel has been added for visualizing SensorBox data. You can define settings for the calculated channels in expert mode only.
  - See section “Setting the Specific System Yield" on page 118.
  - See section “Setting the Performance Ratio" on page 120.

2.2 Applications

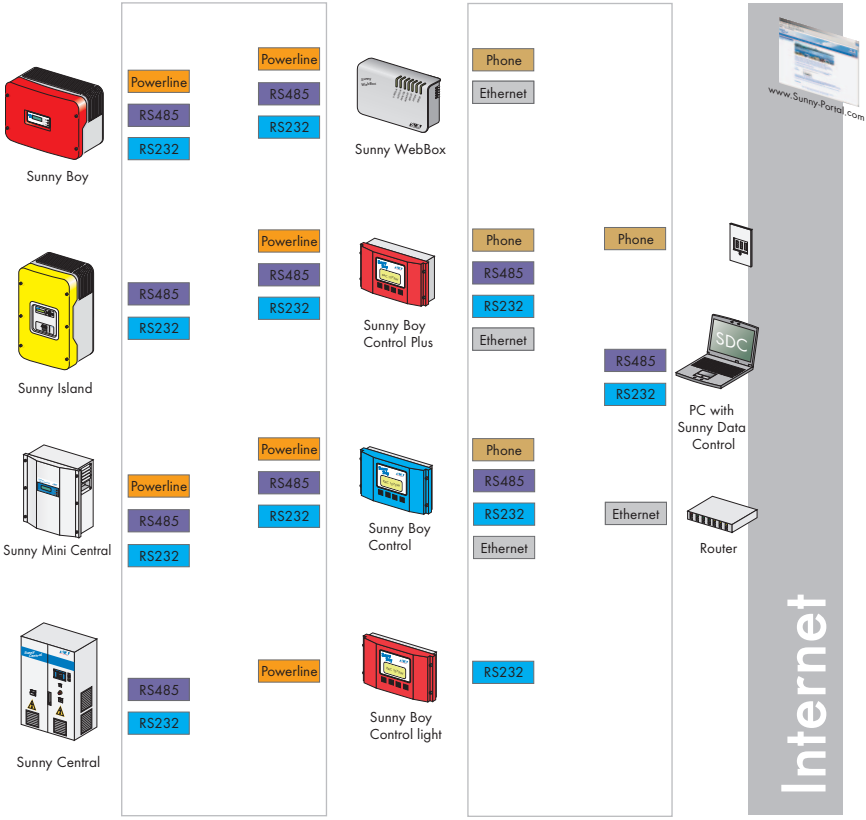
Sunny Portal is a web service from SMA Technologie AG which enables you to set up personal Sunny Portal websites, on which you can visualize data pertaining to your photovoltaic system. Sunny Portal also archives this data. This means that you can access your system data via the Internet from any location worldwide.

Sunny Portal offers you a wide range of functions for monitoring and visualizing your photovoltaic system, such as:

- System information via e-mail
  (e.g. yield, max. output, CO_2 reduction, system messages)
- Presentation of system data in diagrams and tables
- Publishing of individual Sunny Portal web pages
- Individual page design by means of HTML
- Display of CO_2 reduction and remuneration
- Creation of several web pages with visualizations of system data
- Inserting own system images

You can record the data from your inverters by means of a data logger (communication device) and comfortably forward it to Sunny Portal. You can choose whether to forward the data to Sunny Portal via web service (Sunny WebBox) or via e-mail (Sunny Data Control, Sunny Boy Control or manual compilation).

The following figure provides an overview of the connection possibilities. You can obtain further information at www.SMA.de.



2.3 From the Inverter to Sunny Portal

This section explains which type of connection and which communication device you need in order to forward data from your PV system to Sunny Portal. Firstly, you need to select the type of communication which best suits you and your inverters. Then choose the appropriate communications device for the chosen communication type.

- Selecting the communication type
  - depends on the number of inverters
  - depends on your inverter types' refittable communication ports
- Selecting the communication device

2.3.1 Selecting the Communication Type

There are four different ways in which an inverter can communicate with a communication device. Each communication type offers different options, and needs to be individually adjusted to the number of inverters and to your inverter types' possible communication ports.

The following tables provide an overview of the possible number of inverters which can be connected using each respective communication type. The possible distance from the inverter to the communication device is also dependent on the communication type.

Number of Inverters

Use this table to select your number of inverters, and the appropriate communication type.

Number of inverters	Connection type	Distance from inverter to communication device
up to 50	Powerline	up to 1000 m
up to 50	RS485	up to 1200 m
1	RS232	up to 12 m

Communication Ports on the Inverter

Use this table to check whether your inverters can be fitted for the necessary communication type.

Inverter	Communication ports		
	Powerline	RS485	RS232
Sunny Boy	x	x	x
Sunny Island	-	x	x
Sunny Mini Central	x	x	x
Sunny Central	-	x	x

2.3.2 Selecting the Communication Device

Communication device	Type of communication to the inverter		
	Powerline	RS485	RS232
Sunny WebBox	x	x	x
Sunny Boy Control Plus	x	x	x
Sunny Boy Control	x	x	x
Sunny Boy Control Light	x	-	-

2.4 From the Communication Device to Sunny Portal

2.4.1 Sunny WebBox

- Via analog modem (optional) directly connected to the Internet
- Via Ethernet network with Internet connection (e.g. DSL router)

2.4.2 Sunny Boy Control/Sunny Boy Control Plus

- Via serial connection (RS232, RS485) to a PC with installed Sunny Data Control software and Internet access

Equipped with NET Piggy-Back

- Via modem, available in four versions: analog, ISDN, GSM, Ethernet

2.4.3 Sunny Boy Control Light

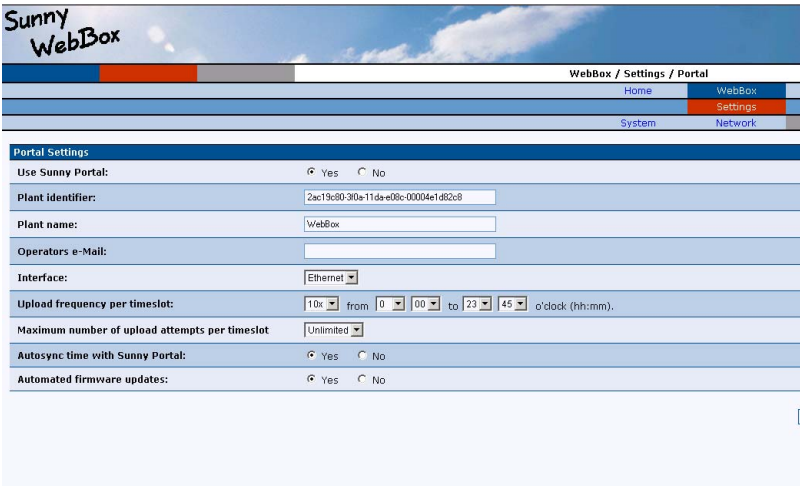
- Via serial connection (RS232, RS485) to a PC with installed Sunny Data Control software and Internet access

3 Registering at Sunny Portal

Via your communication device, you can register at Sunny Portal. The registration depends on your communication device, and is explained below. Subsequently, it is explained how to log in at Sunny Portal for the first time, and how to call up your personal Sunny Portal site.

3.1 Registration via Sunny WebBox

Use the Sunny WebBox user interface to register at Sunny Portal with the Sunny WebBox. In so doing, please refer to the Sunny WebBox user manual.



1. In the Sunny WebBox interface, enter the settings for Sunny Portal as described in the "Sunny Portal Settings" section in the Sunny WebBox user manual.
2. After registering, you will receive an e-mail from Sunny Portal containing your access data.
3. Call up your personal Sunny Portal site as described in section “Logging in at Sunny Portal" on page 19.

3.2 Registration with Sunny Boy Control Light

With the Sunny Boy Control Light, you can register via SMA's Sunny Data Control software. In the Sunny Boy Control Light user manual, you can read how to use Sunny Data Control to detect the Sunny Boy Control Light. The registration at Sunny Portal via Sunny Data Control is described in section “Registration via Sunny Data Control" on page 17.

3.3 Registration with Sunny Boy Control / Plus

With the Sunny Boy Control and the Sunny Boy Control Plus, you can register via SMA's Sunny Data Control software. In your Sunny Boy Control user manual, you can read how to use Sunny Data Control to detect the Sunny Boy Control and Sunny Boy Control Plus. The registration at Sunny Portal via Sunny Data Control is described in section “Registration via Sunny Data Control" on page 17.

Sunny Boy Control / Plus with NET Piggy-Back

If your Sunny Boy Control or Sunny Boy Control Plus is equipped with the optional NET Piggy-Back, you can forward the inverter data to Sunny Portal directly via Ethernet, or one of the possible modems. The registration at Sunny Portal occurs via the Sunny Boy Control/Plus menu and is described in the NET Piggy-Back's user manual.

3.4 Registration via Sunny Data Control

The Sunny Data Control software from SMA is needed when forwarding data from the communication device to Sunny Portal (not necessary for the Sunny WebBox and the Sunny Boy Control / Plus with NET Piggy-Back).

1. In Sunny Data Control, set up Sunny Portal mail as described in the Sunny Data Control help. You will receive an e-mail from Sunny Portal containing your access password.

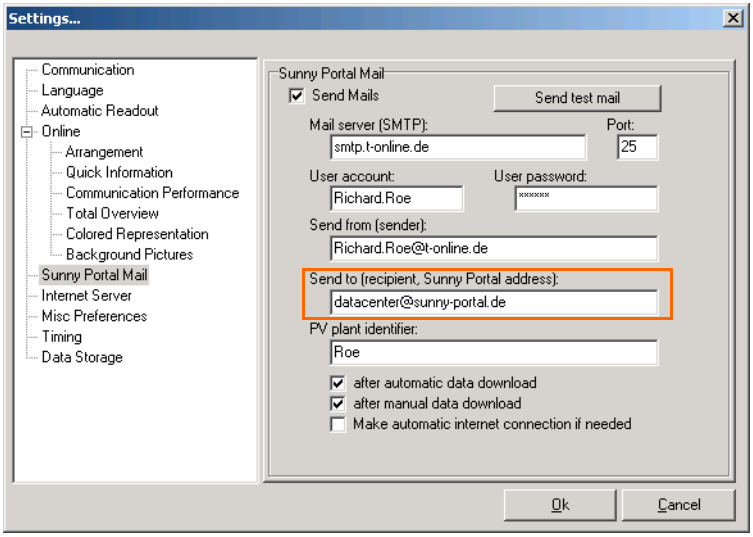


Figure with sample settings.
The Sunny Portal address is always datacenter@sunny-portal.de.

First-time Registration for New Customers

Enter any name for your system as the PV system identifier (e.g. SampleSystem). You cannot change the PV system identifier once you have successfully registered!

If the system identifier you choose is already used in the Sunny Portal, you will receive an error message by e-mail. You will then need to use a different name as your PV system identifier.

After successful registration you can log in at Sunny Portal and call up your personal Sunny Portal site, as described in section “Logging in at Sunny Portal" on page 19.

Adding a System to an Existing System

If you have registered on the Sunny Portal using your e-mail address and want to add a system to your existing system, use the same e-mail address but a different PV system identifier than the one you assigned to your existing system.

If you use a name as your PV system identifier that another Sunny Portal customer already uses, you will receive an error message by e-mail from Sunny Portal. You will then need to use a different name as your PV system identifier.

After successful registration you can log in at Sunny Portal and call up your personal Sunny Portal site, as described in section “Logging in at Sunny Portal" on page 19.

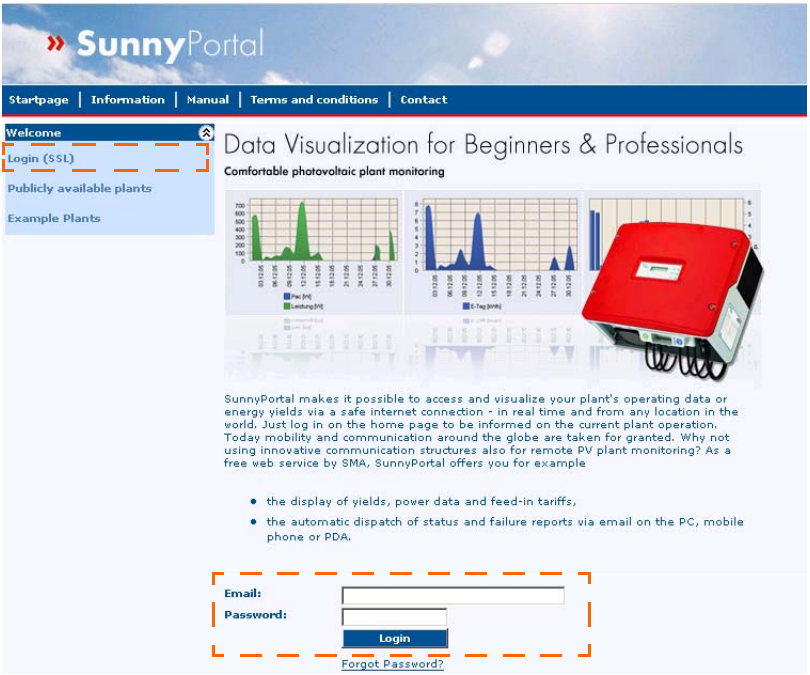
Sending Data to External Systems (Authorized Users)

Before you can send your data to an external system using your own e-mail address, the system owner must enter you as an authorized user for its system. See section “User Management" on page 129.

4 Logging in at Sunny Portal

Once you have registered at Sunny Portal with your communication device, you can call up your personal Sunny Portal site as described here. You will need the password which was sent to you via e-mail by Sunny Portal after registration, as well as the e-mail address which you specified.

1. Call up the www.SunnyPortal.com site.
2. If you want your login data to be transferred securely, first click on Login (SSL) before carrying out the next step.
3. Type your specified e-mail address into the "E-mail:" field.
4. In the "Password:" field, type in the password which was sent to you via e-mail by Sunny Portal.


SunnyPortal
Startpage | Information | Manual | Terms and conditions | Contact
Welcome
Login (SSL)
Publicly available plants
Example Plants
Data Visualization for Beginners & Professionals
Comfortable photovoltaic plant monitoring
SunnyPortal makes it possible to access and visualize your plant's operating data or energy yields via a safe internet connection - in real time and from any location in the world. Just log in on the home page to be informed on the current plant operation. Today mobility and communication around the globe are taken for granted. Why not using innovative communication structures also for remote PV plant monitoring? As a free web service by SMA, SunnyPortal offers you for example
the display of yields, power data and feed-in tariffs,
the automatic dispatch of status and failure reports via email on the PC, mobile phone or PDA.
Email:
Password:
Login
Forgot Password?

5. Click on <Login>. When logging into Sunny Portal for the first time, the "User Information" window opens.

User information
Hello at Sunny-Portal!
You are the first time on the this site.
Before you can proceed with your work in Sunny-Portal, you have to fill out your personal profile.
Notice: If you change your E-Mail adress, your login account name will change too!
Title: Mr.
First Name: Richard
Last name: Roe
Company:
Street/No: Street 38
Zip/City: 10002 New York
Country: UNITED STATES
Timezone: (UTC-06:00) Central America
Phone number:
Fax number:
Email address: richard.roe@t-online.de
Usermode: standard advanced
If you want to change the password, click here.
Edit
Save
Cancel

6. Fill out the fields with your address data.
   Leave the "User mode" set to "Normal". This user manual will first guide you through the Sunny Portal functions in normal mode. The expert mode with additional portal functions is dealt with in section “Additional Functions in Expert Mode" on page 107.
7. Click on <Save>.

The "Overview" page is displayed on your Sunny Portal site. Once your system data has been forwarded, Sunny Portal automatically sets up the standard pages "Overview" and "Energy and Power" for your system data, in the "Visualization" menu. An overview page with the device name (serial number or modified name) is created automatically for the data (e.g. "Overview 20000115546").

The display of the available data on the page shown will vary according to the amount of system data transferred.

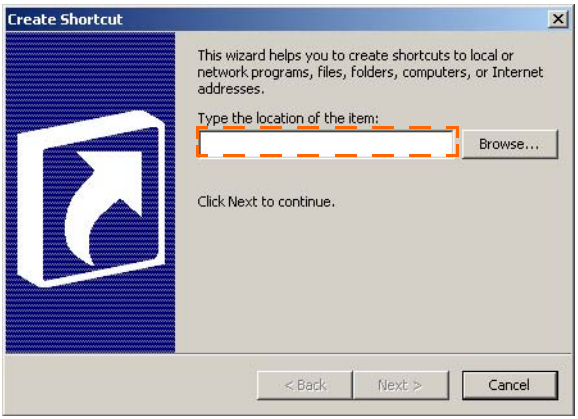
4.1 Creating an Auto-login Shortcut

An auto-login shortcut allows you to call up your personal Sunny Portal site with one mouse click. This saves you having to log in at Sunny Portal with your access data (typing in e-mail address and password).

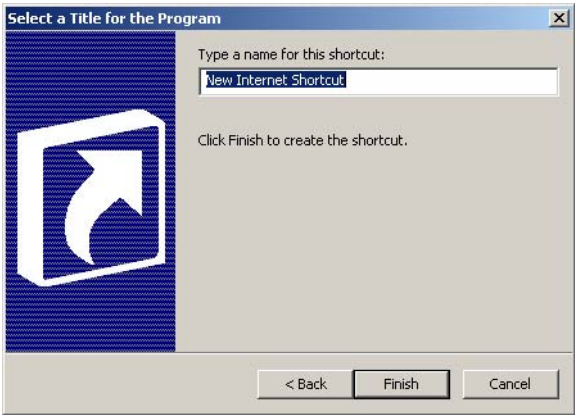
An auto-login shortcut does present a security risk.
Within the shortcut, your personal access data (e-mail address, password) is saved in a readable format on your PC. Anyone with access to your PC can read this data and misuse it.

1. Right-click on your desktop.
2. In the menu, select "New / Shortcut".

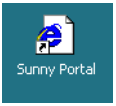
The window "Create Shortcut" opens.


Create Shortcut
This wizard helps you to create shortcuts to local or network programs, files, folders, computers, or Internet addresses.
Type the location of the item:
Browse...
Click Next to continue.
< Back
Next >
Cancel

3. Type the following link into the field (see figure above), replacing the gray text with your corresponding login data, with which you log in at Sunny Portal (e-mail address, password):
   http://www.sunnyportal.com/sunny-portal/Templates/Autologin.aspx?user=YourE-mailAddress&pass=YourPassword
4. Click on <Next>.



5. In this field, type a name for the shortcut, for example: "Sunny Portal".
6. Then click on <Finish>. The shortcut is displayed on your desktop. If you now click on the shortcut (or double-click, depending on your PC settings), your Sunny Portal site opens automatically.

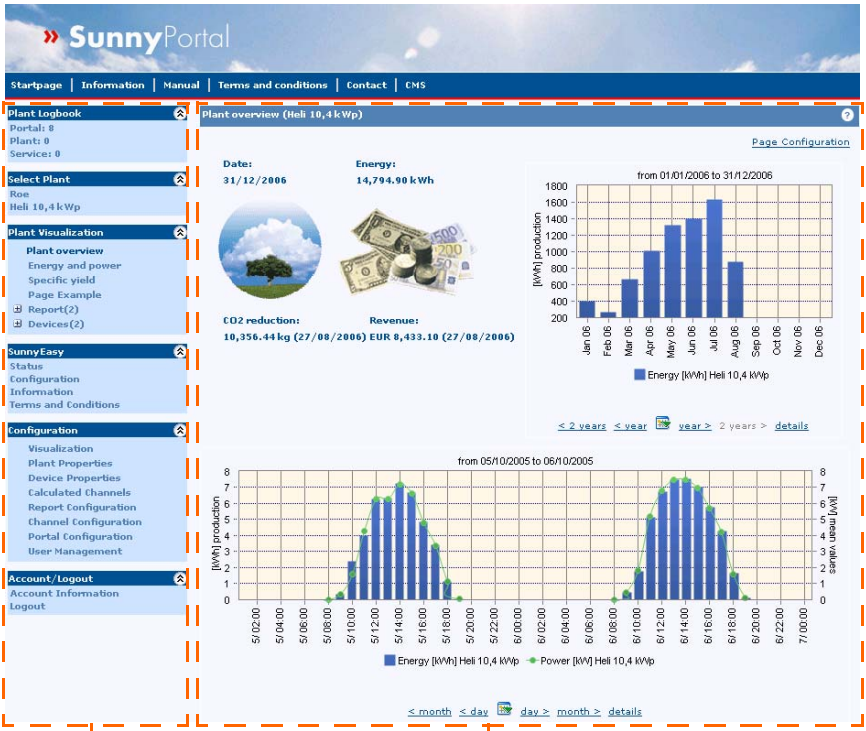


5 Quick Introduction

5.1 Sunny Portal Web Interface

Your Sunny Portal web interface is divided into two areas:

- Navigation area
  You can call up the individual pages of your Sunny Portal site via the navigation area.
- Display area
  The pages which you select in the navigation open in the display area.

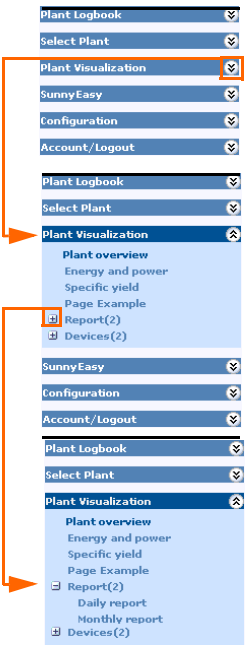


Navigation area Display area

5.2 Navigation Area

The navigation is itself subdivided into four or five menus. The additional menu item "System Selection" only appears if you have registered more than one system at Sunny Portal.

1. System log
   You receive messages from your systems and from Sunny Portal in the system log.
2. System selection
   Displays your systems registered under your e-mail address. You can select the systems with a mouse click. The "System Selection" menu is only displayed if more than one system is registered.
3. Visualization
   All pages pertaining to your Sunny Portal system are listed in the "Visualization" menu. You can navigate through the pages with a click of the mouse.
4. Configuration
   In the "Configuration" menu, you can adjust settings, for example change the names of the devices on your Sunny Portal site.
5. User Info/Logout
   In the "User Info/Logout" menu, you can adjust your personal settings (e.g. change password, edit address data) and exit the Sunny Portal site via the menu item "Logout".



By clicking on the arrows in the navigation area, you can expand and collapse the menus to reveal or hide the menu items.

If, for example, you click on the downward arrow alongside the "Visualization" menu, the menu items are revealed.

A plus sign in front of a menu item indicates that it contains further menu items. By clicking on the plus sign, the menu items are revealed. By clicking on the minus sign, the menu items are hidden once again.

Overview of the Navigation Area Functions

Call up the system log entries from Sunny Portal, from the system and from service.

Systems registered on your Sunny Portal page.

Pages created. Sunny Portal creates the "Plant overview", "Energy and Power", "Specific yield" and "Performance Ratio" standard pages automatically.

Standard pages for the system report created automatically by Sunny Portal.

The standard pages for your devices ("Overview + Device Serial Number") are automatically created by Sunny Portal.

The portal automatically creates standard pages for Sunny SensorBox (if applicable).

Create / edit / delete pages, change the order of pages in the navigation area, create groups.

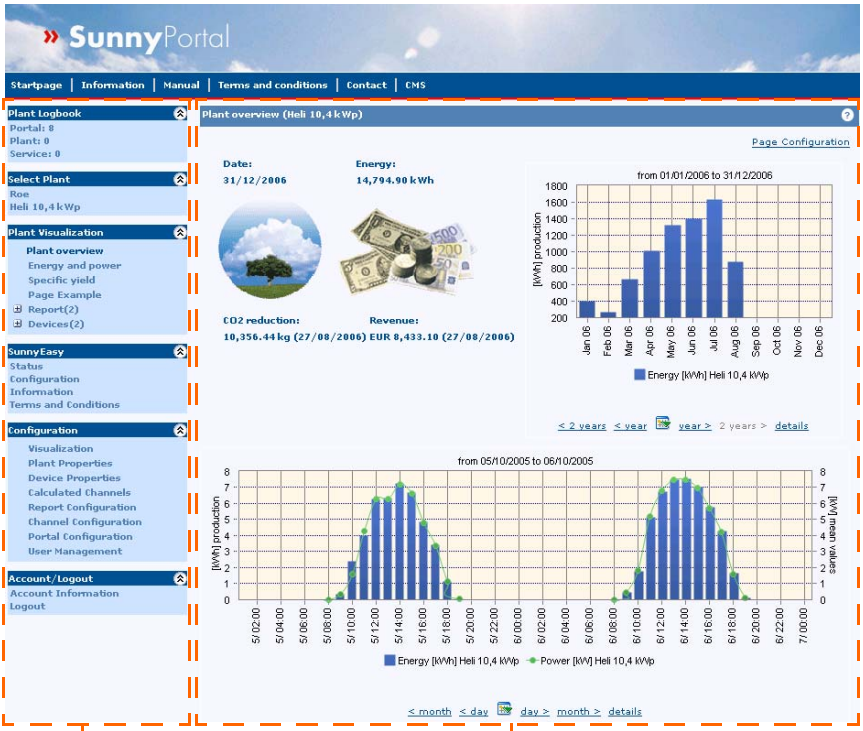
Set system properties.
Change device name, delete device.
Configure reports.

Change address data and passwords, select normal or expert mode.
End your visit to your Sunny Portal site.

For explanations of the additional menu options in expert mode, see section "Additional Functions in Expert Mode" on page 107.

5.3 Display Area

The pages which you select in the navigation are shown in the display area.



5.4 Logout

If you wish to end your visit to your Sunny Portal site, click on the menu item "Logout" in the "Service" menu.

6 Setting up Pages Step by Step

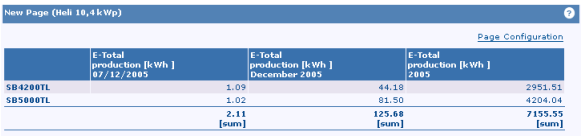
You can create and save pages at your Sunny Portal. The pages are stored as menu items in the "Visualization" menu. If you click in the "Visualization" menu on the name of the page you have created, this page is then shown in the display area.

The procedure for creating a page is subdivided into two individual steps:

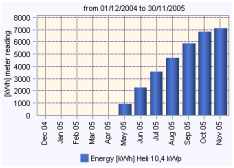
- Create new page
- Set module type

You can set up the pages with a selection from five different module types:

- Table
- Diagram (versatile settings for values, X axis and two Y axes)
- Image (insert an image of your choice)
- Overview (automatically created overview with remuneration display and CO_2 values)
- Text (insert text of your choice, also HTML)


New Page (Heli 10,4 kWp)
Page Configuration
E-Total production [kWh] 07/12/2005
E-Total production [kWh] December 2005
E-Total production [kWh] 2005
SB4200TL 1.09 44.18 2951.51
SB5000TL 1.02 81.50 4204.04
2.11 [sum] 125.68 [sum] 7155.55 [sum]

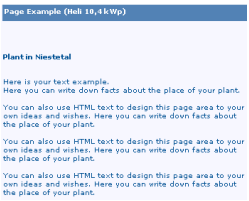
Example table



Example diagram

Example image

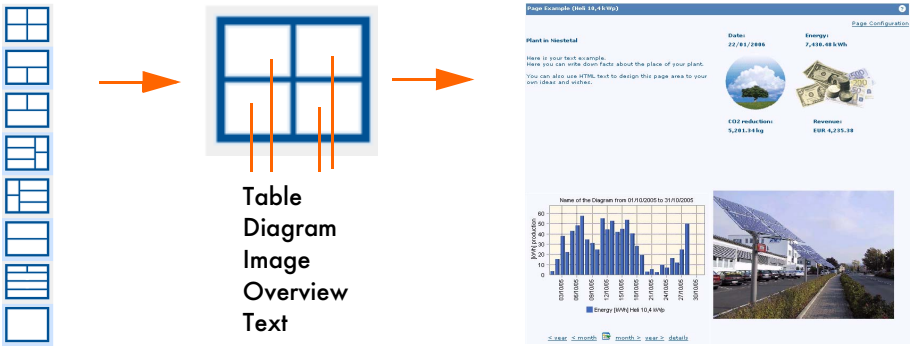
Example overview


Page Example (Heli 10,4 kWp)
Plant in Niestetal
Here is your text example.
Here you can write down facts about the place of your plant.
You can also use HTML text to design this page area to your own ideas and wishes. Here you can write down facts about the place of your plant.
You can also use HTML text to design this page area to your own ideas and wishes. Here you can write down facts about the place of your plant.
You can also use HTML text to design this page area to your own ideas and wishes. Here you can write down facts about the place of your plant.

Example text

You can select different page divisions, and set up each area according to your wishes, using **one** of the five module types (table, diagram, image, overview, text).

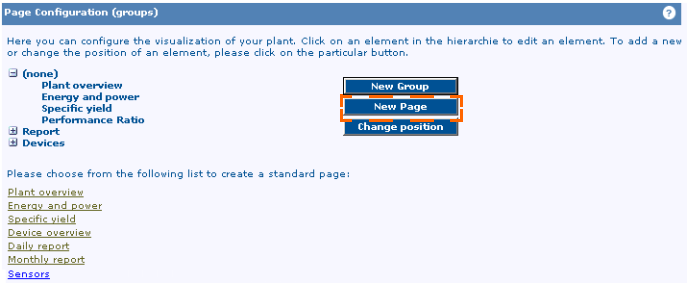
Example:



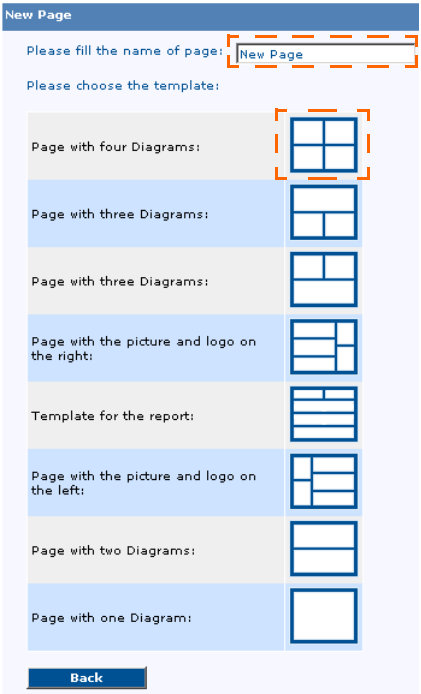
In this section, the example of a page divided into four areas is used. As practice, you could set up the example page as described, or choose your own page layout.

6.1 Creating a New Page

1. Click on "Configuration / Visualization".
2. Click on <New Page>.


Page Configuration (groups)
Here you can configure the visualization of your plant. Click on an element in the hierarchie to edit an element. To add a new or change the position of an element, please click on the particular button.
(none)
Plant overview
Energy and power
Specific yield
Performance Ratio
Report
Devices
New Group
New Page
Change position
Please choose from the following list to create a standard page:
Plant overview
Energy and power
Specific yield
Device overview
Daily report
Monthly report
Sensors

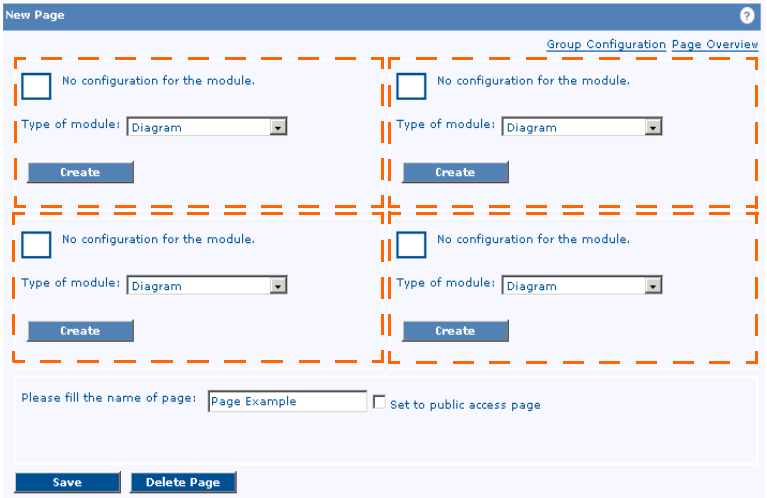
The window for selecting the page template opens.


New Page
Please fill the name of page:
New Page
Please choose the template:
Page with four Diagrams:
Page with three Diagrams:
Page with three Diagrams:
Page with the picture and logo on the right:
Template for the report:
Page with the picture and logo on the left:
Page with two Diagrams:
Page with one Diagram:
Back

3. Click in the "New Page" field, and assign a new page name, e.g. Example Page.
4. Select a page template by clicking on the desired plan. In this example, the template "Page with four diagrams" is used.

The page for editing the page layout opens.
The page layout can be recognized according to the selected page template (see figure). Now a module type can be individually selected for each area.

Example: page template "Page with four diagrams".

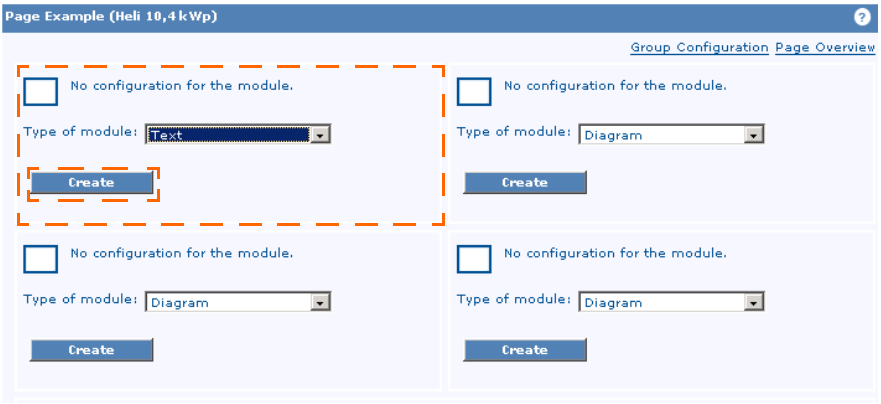


6.2 Selecting the Module Type

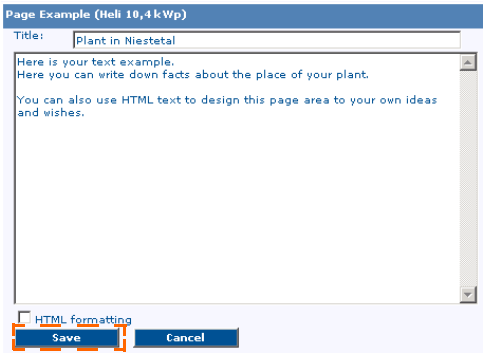
6.2.1 The Text Module Type

In this example, the upper left area is to be set up.

1. In the desired area, select the module type "Text" in the drop-down list.
2. In the selected area, click on <Create>.

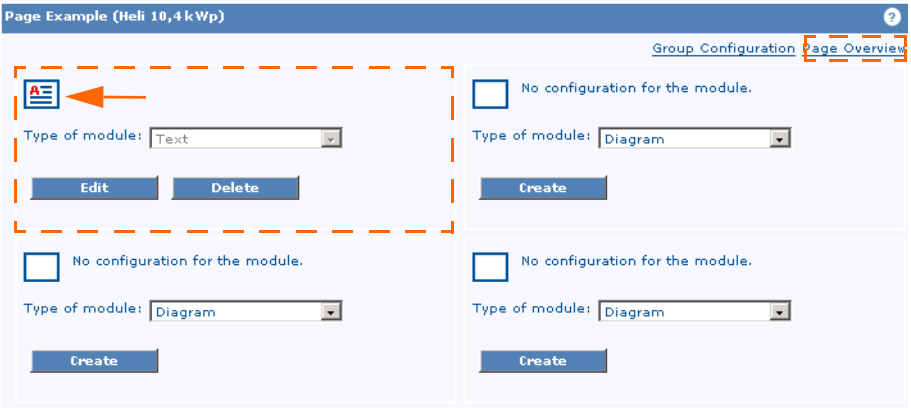


The text entry window opens.


Page Example (Heli 10,4 kWp)
Title: Plant in Niestetal
Here is your text example.
Here you can write down facts about the place of your plant.
You can also use HTML text to design this page area to your own ideas and wishes.
HTML formatting
Save
Cancel

3. In the "Title" field, type a heading for your text.
4. In the field underneath, write the desired text (e.g. location and size of your system).
5. Remove the check mark from the "HTML format" checkbox in order to incorporate line breaks into your text. If you are familiar with HTML, leave the check mark in the "HTML format" checkbox, and format your text using HTML code. Further information on HTML can be found in section “A Look at HTML" on page 133.
6. Click on <Save>.

The page for editing the page layout is displayed again.
The symbol (see arrow) indicates that the module type "Text" has been selected for this area.



7. Click on "Page view" (see figure above) to view the page.

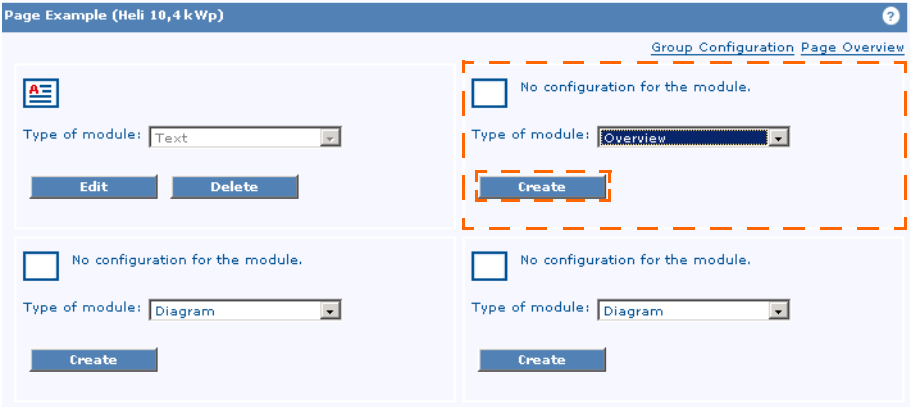
Page Example (Heli 10,4 kWp)
Page Configuration
Plant in Niestetal
Here is your text example.
Here you can write down facts about the place of your plant.
You can also use HTML text to design this page area to your own ideas and wishes.

8. Click on "Page configuration" if you wish to call up the page which allows editing of the page layout, in order to carry out changes to the page areas, or to set up further areas.

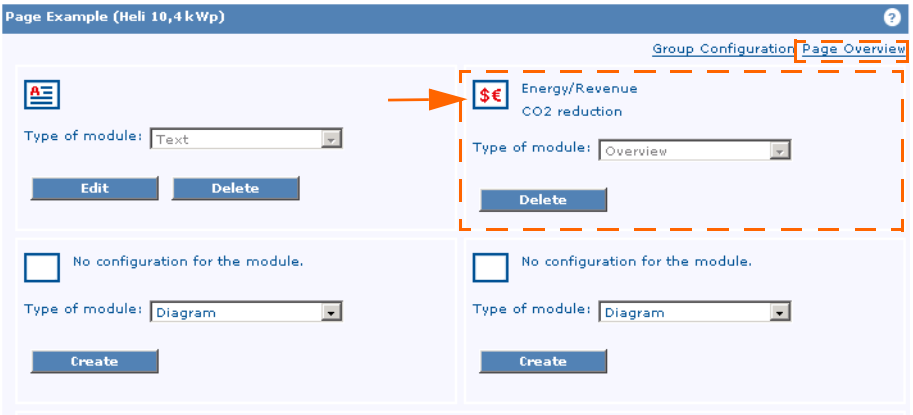
6.2.2 The Overview Module Type

In this example, the upper right area is to be set up.

1. In the desired area, select the module type "Overview" in the drop-down list.
2. In the selected area, click on <Create>.
   Sunny Portal sets up the module type "Overview" itself.



The page for editing the page layout is displayed again. The symbol (see arrow) indicates that the module type "Overview" has been selected for this area.



3. Click on "Page view" (see figure above) to view the page.

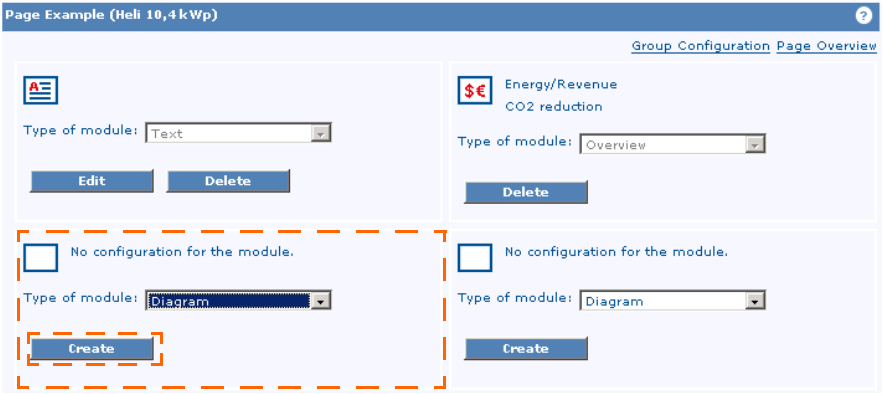
Page Example (Heli 10,4 kWp)
Page Configuration
Plant in Niestetal
Here is your text example.
Here you can write down facts about the place of your plant.
You can also use HTML text to design this page area to your own ideas and wishes.
Date:
22/01/2006
Energy:
7,430.48 kWh
CO2 reduction:
5,201.34 kg
Revenue:
EUR 4,235.38

4. Click on "Page configuration" if you wish to call up the page which allows editing of the page layout, in order to carry out changes to the page areas, or to set up further areas.

6.2.3 The Diagram Module Type

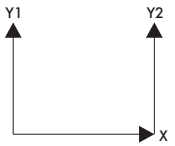
In this example, the lower left area is to be set up.

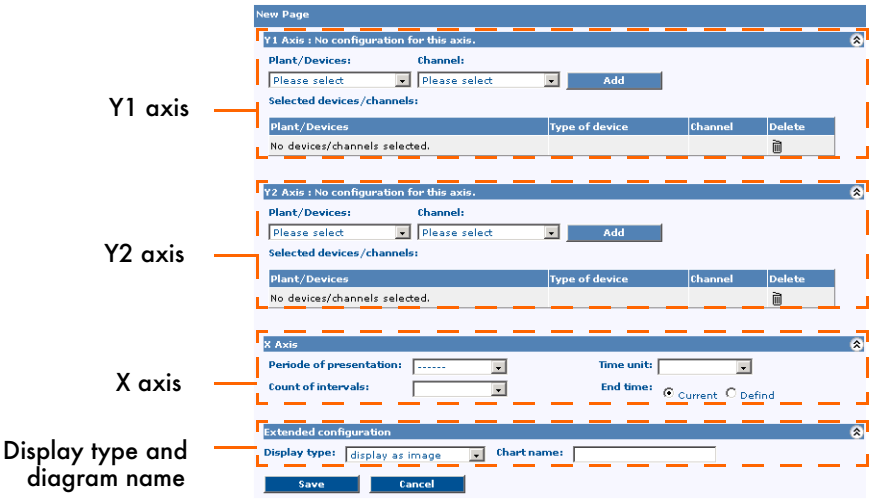
1. In the desired area, select the module type "Diagram" in the drop-down list.
2. In the selected area, click on <Create>.



The page for setting up the diagram opens (see figure below). You can set up the diagram on three axes. A diagram consists of at least an X axis and a Y1 axis. The Y2 axis is optional.

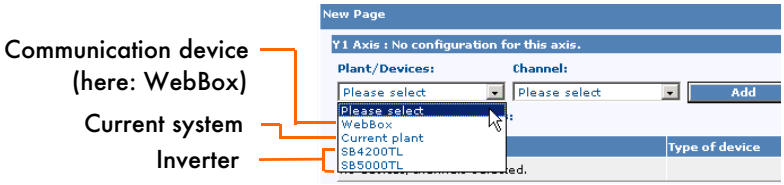
In the next step, the Y1 axis is to be set up.





Setting up the Y1 Axis

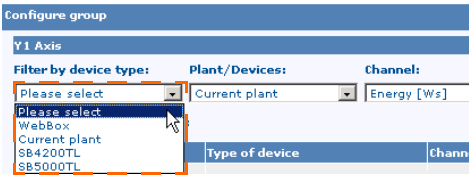
In the "System/Devices:" drop-down list you can select whether you want to make the channels of the currently selected system or of a device for the diagram. Only the devices in the currently selected system are available. You can then select the required channels in the next step.



- Communication device:
  When you select a communication device (e.g. WebBox), the "Channel:" drop-down list contains the channels for that communication device.
- Current system:
  If this menu item is selected, the "Channel:" drop-down list contains the channels of the selected system.
- Inverter:
  When you select an inverter (e.g. SB4200TL), the "Channel:" drop-down list contains the inverter channels.

Note on the View in Expert Mode

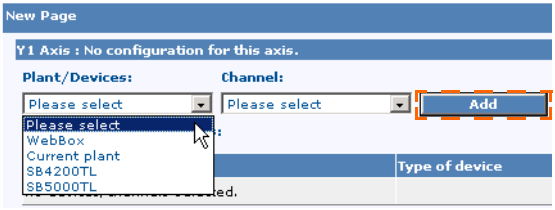
If you have set up expert mode (see section "Additional Functions in Expert Mode" on page 107), the view also contains the "Restrict selection:" menu.



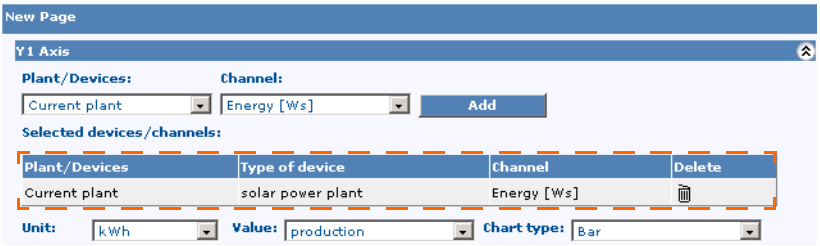
This menu lets you preselect the device type. This preselection is helpful for systems with a large number of inverters since the device type groups the individual inverters. The "System/Devices:" menu then displays only the devices of the selected device type. The preselection option adds clarity when you have a large number of inverters.

3. In the drop-down list "System / Devices:", select the data which is to be made available. In the example, "Current system" is selected.
4. In the drop-down list "Channel", select the data which is to be made available. In the example, "Energy [Ws]" is selected.

For devices, all of the channels transferred to Sunny Portal are available in the "Channel" drop-down list. For a system, the four calculated channels are available. As a preset, for example, in a calculated channel, the sum of the yields (energy) from all inverters in a system is calculated.

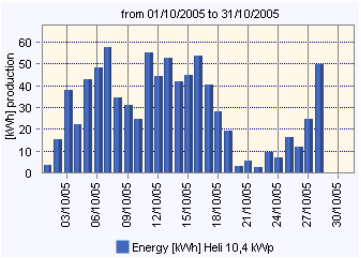


5. Click on <Add>.
   The settings for the Y1 axis are saved and added to the list (see figure below).

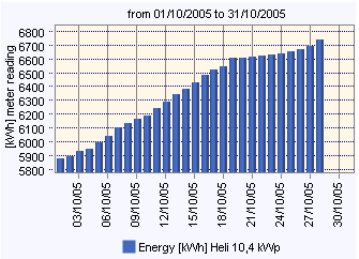


Now the "Unit", the "Value", and the "Graph type" need to be set.

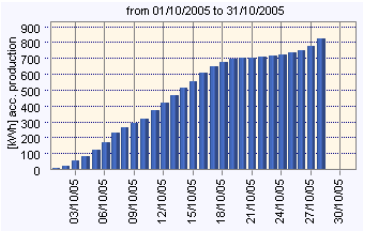
- Unit:
  You can set the unit for the Y1 axis here.
- Value:
  You can set the type of value for the Y1 axis here. The following channel types are available, depending on the channel:
  - Analog values
    - Average values:
      The average value of the channel during the period to be selected.
    - Maximum values:
      The highest value of the channel during the period to be selected.
    - Minimum values:
      The lowest value of the channel during the period to be selected.
  - Meter channels
    - Meter change:
      The increase compared to the last value saved.
    - Meter reading:
      The current total meter reading of the value (absolute value).
    - Cumulative change:
      The total increase within the period to be selected.



Example meter change

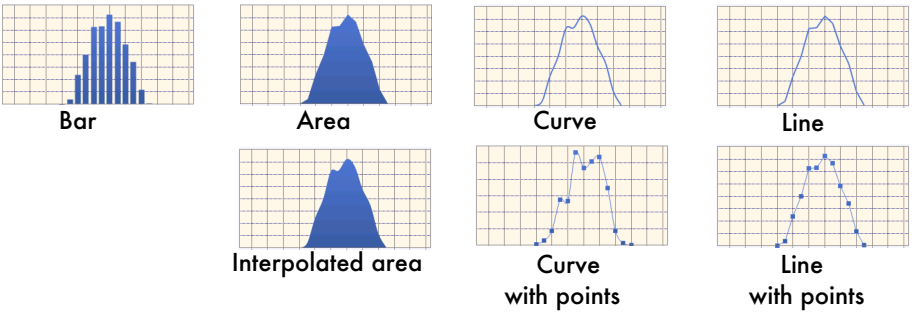


Example meter reading

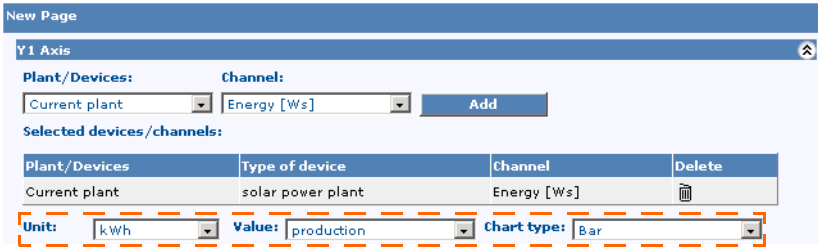


Example cumulative change

- Graph type:
  This allows you to select the form of the diagram. The following forms are available:



6. Set the desired "Unit", "Value", and "Graph type". In the example, the following settings are used: Unit = kWh, Value = meter reading, Graph type = bar.



In the same manner, you can set additional values to be displayed on the Y1 axis.

When selecting channels for additional values, the additional channels available for selection correspond to the unit of the first channel. If the base unit of the first selected channel is "Watts", the only channels subsequently selectable are those compatible with "Watts". The selection options are automatically restricted by Sunny Portal accordingly.

Setting up the Y2 Axis

The Y2 axis is optional. You can set up the Y2 axis in the same manner as the Y1 axis.

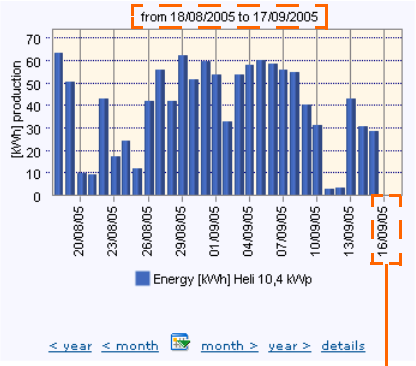
Setting up the X Axis

In the next step, you need to set up the X axis (horizontal axis). The following settings are possible:

- Display period
  Here, you can specify the period to be displayed on the X axis (hour, day, month, year).
- Number of periods
  Here, you can select the number of display periods, for example: 3 hours or 1 month.
- Time unit
  Here, you can specify the time units into which the periods are to be subdivided, for example: month subdivided into days, or days subdivided into hours.
- Last date for display
  Here, you can specify that the last date on the X axis is always the current date, or you can set a specific last date.
  - Current:the last date on the X axis is always the current date.
  - Selectable: you can specify the last date on the X axis.

Example: **last date "Current"**

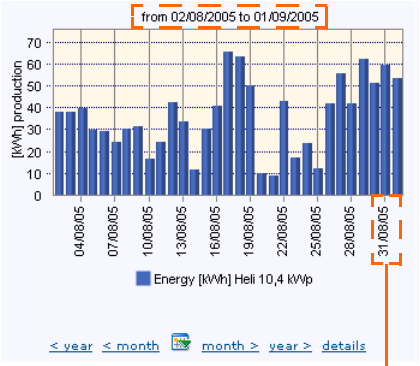
Diagram period: month
Number of periods: 1
Time unit: day



dating back one month from the specified date

Example: **last date "Selectable"**

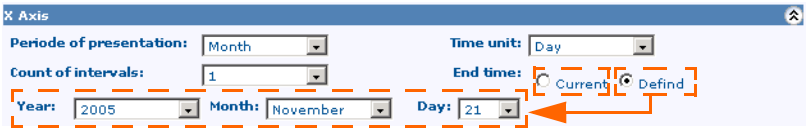
Diagram period: month
Number of periods: 1
Time unit: day



dating back one month from the specified date

The corresponding buttons beneath the diagram allow you, for example, to view the previous month or the next month.

7. Set up the X axis as desired.
   In the example, "Month" is selected as the display period, "1" (= 1 month) is selected as number of periods, the time unit is set to "Day", and the last date for display is set to "Selectable" (= in the example: November 21, 2005).



The selection options for "Time unit" and "Number of periods" are adjusted according to the selected "Display period".

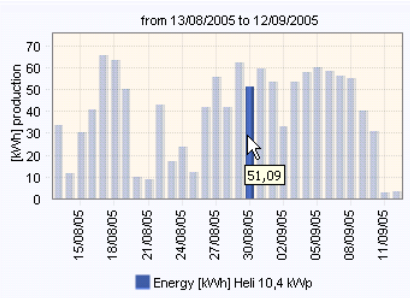
Setting the Display Type and the Diagram Name

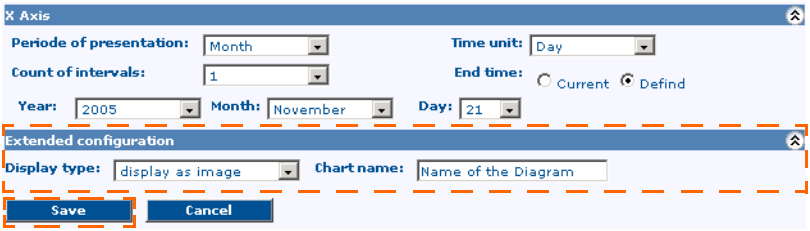
Now you can give the diagram a name, and specify whether the diagram is to be displayed as an image, or as a dynamic ".NET diagram" (pronounced "dot NET diagram"). If you wish to make the diagram available to other Internet users via a shared page, or if you access your Sunny Portal site from different PCs, we recommend that you display the diagram as an image.

If you wish to have .NET objects displayed, you need to install the ".NET Framework version 1.1" software from Microsoft on your PC. You will find the link on the start page at www.SunnyPortal.com.

The following display types can be selected:

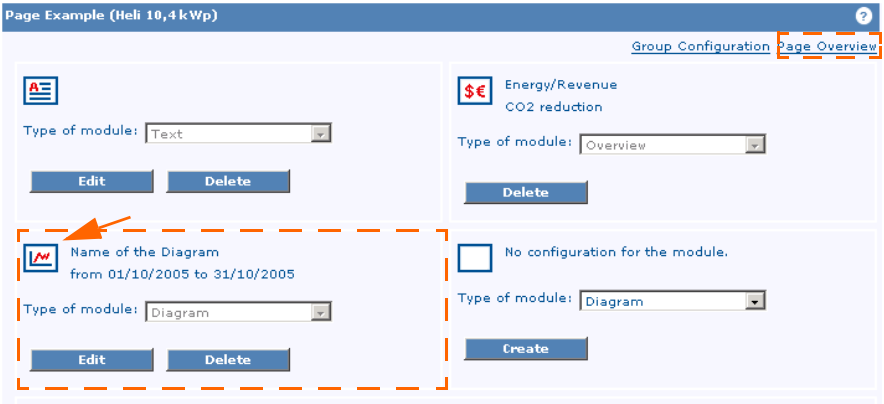
- Display as image:
  The diagram will be displayed as an image on your Sunny Portal site.
- Automatic display selection:
  Sunny Portal checks whether your browser has installed the Microsoft .NET environment and selects this display type if possible. If your browser cannot display ".NET", "Display as image" is automatically selected.
- Display as .NET object:
  The diagram will be displayed as a .NET object. If the cursor is placed on a curve in the diagram, the other curves in the diagram are concealed. In addition, individual values can be read with increased precision if the cursor is placed on top of them.



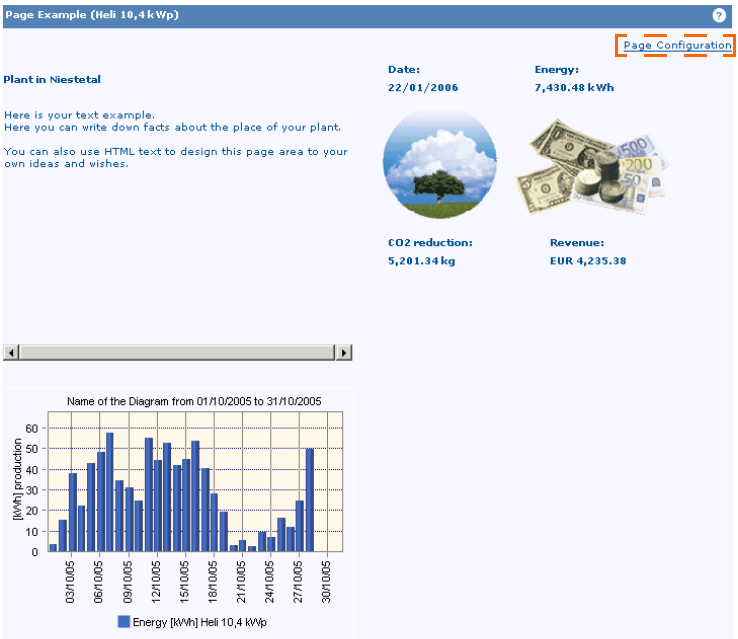


8. If you wish to assign a diagram name, write it in the "Diagram name" field. The diagram name is then displayed above the diagram.
9. Click on <Save>.

The page for editing the page layout is displayed again. The symbol (see arrow) indicates that the module type "Diagram" has been selected for this area.



10. Click on "Page view" (see figure above) to view the page.

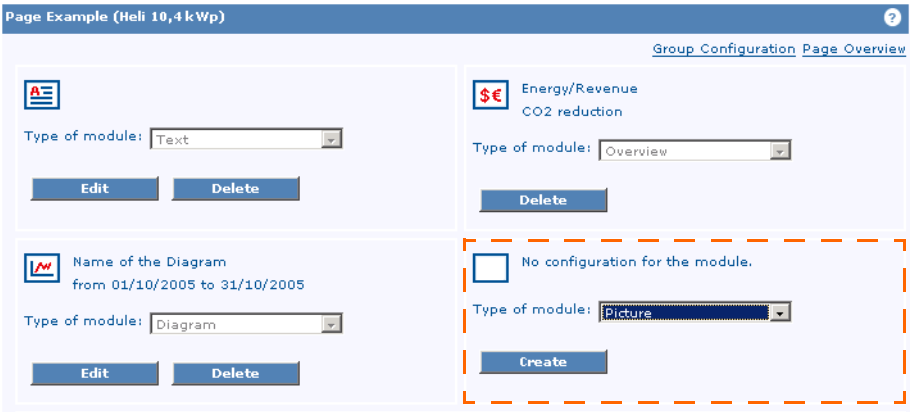

Page Example (Heli 10,4 kWp)
Page Configuration
Plant in Niestetal
Here is your text example.
Here you can write down facts about the place of your plant.
You can also use HTML text to design this page area to your own ideas and wishes.
Date:
22/01/2006
Energy:
7,430.48 kWh
CO2 reduction:
5,201.34 kg
Revenue:
EUR 4,235.38
Name of the Diagram from 01/10/2005 to 31/10/2005
[kWh] production
Energy [kWh] Heli 10,4 kWp

11. Click on "Page configuration" if you wish to call up the page which allows editing of the page layout, in order to carry out changes to the page areas, or to set up further areas.

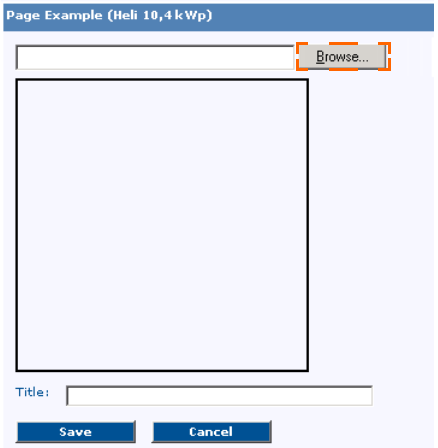
6.2.4 The Image Module Type

In this example, the lower right area is to be set up.

1. In the desired area, select the module type "Image" in the drop-down list.
2. In the selected area, click on <Create>.



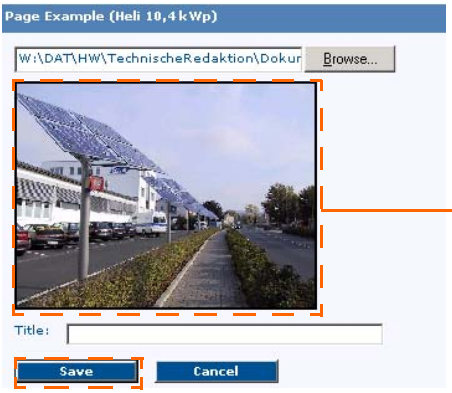
The page for inserting an image opens.



3. Click on <Browse> and select the image which you would like to insert.

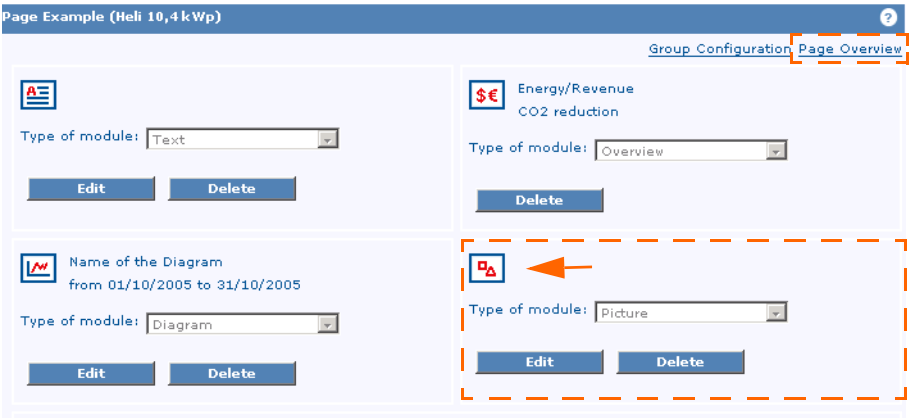
The image cannot be any larger than 150 kB. The image will be proportionally scaled in height and width, according to the size of the page layout.
The following image file formats are supported: JPG, PNG, GIF.

The inserted image is displayed in the preview window (see figure).



4. In the "Title" field, you can enter a title for your image, which will then be displayed beneath the image.
5. Click on <Save>.

The page for editing the page layout is displayed again. The symbol (see arrow) indicates that the module type "Image" has been selected for this area.

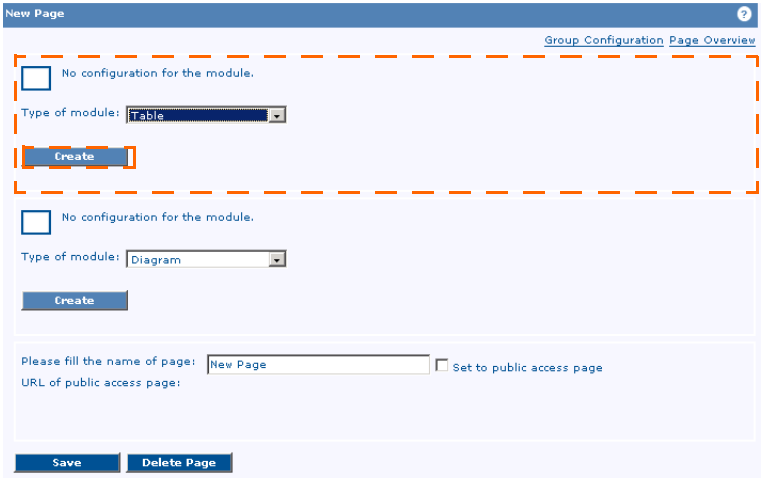


6. Click on "Page view" (see figure above) to view the page.

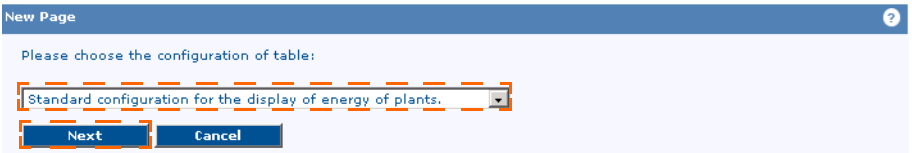
7. Click on "Page configuration" if you wish to call up the page which allows editing of the page layout, in order to carry out changes to the page areas, or to set up further areas.

6.2.5 The Table Module Type

1. In the desired area, select the module type "Table" in the drop-down list. In this example, the page template "Page with two diagrams" is to be used, and the upper area will be set up.
2. In the selected area, click on <Create>.



The page for setting up the table opens.



In the drop-down list, you can choose from three table configurations:

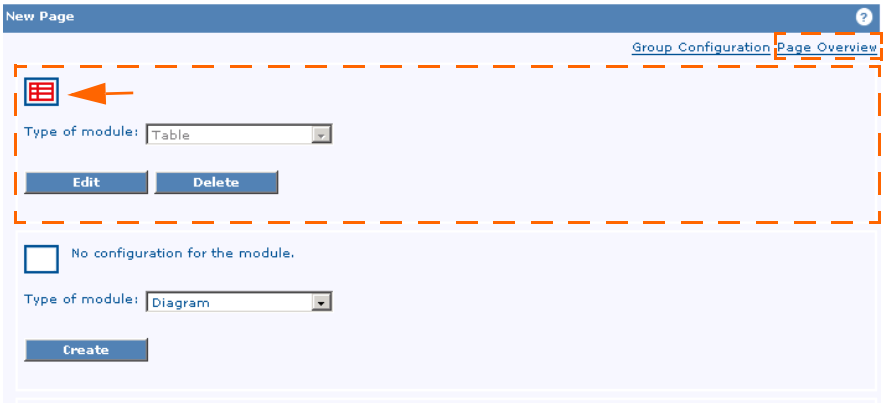
- Standard configuration for the display of system energy
- Standard configuration for the display of inverter energy
- Custom

3. Select a table configuration in the drop-down list, and click on <Next>. The following pages describe how to edit the selected table configuration.
4. Once you have finished setting up the table, click on <Save> on the page which allows editing of the page layout.

6.2.5.1 Standard Configuration

If you have selected one of the two standard configurations, the page for editing the page layout is displayed again. The symbol (see arrow) indicates that the module type "Table" has been selected for this area.

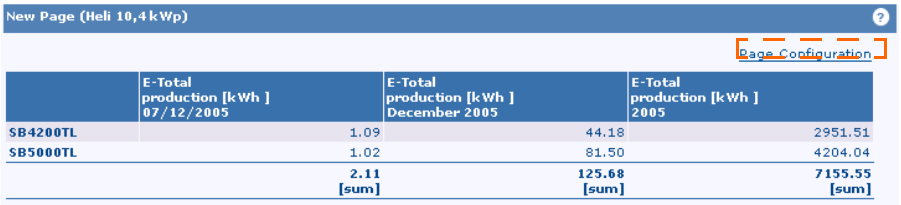
The standard configurations are automatically set up by Sunny Portal. If you click on "Page view", you can view the table which has been set up.



In the standard configuration for display of system energy or inverter energy, three channels are automatically created:

- Energy meter reading from current date
- Energy meter changes from the current month
- Energy meter changes from the current year

If you click on "Page configuration", you can edit or delete the table which has been set up, or you can set up additional tables. If you wish to edit the table, you can make user-defined alterations to the standard configuration. This is explained in section “Custom" on page 49.



	E-Total production [kWh] 07/12/2005	E-Total production [kWh] December 2005	E-Total production [kWh] 2005
SB4200TL	1.09	44.18	2951.51
SB5000TL	1.02	81.50	4204.04
	2.11 [sum]	125.68 [sum]	7155.55 [sum]

Example: standard configuration for the display of inverter energy

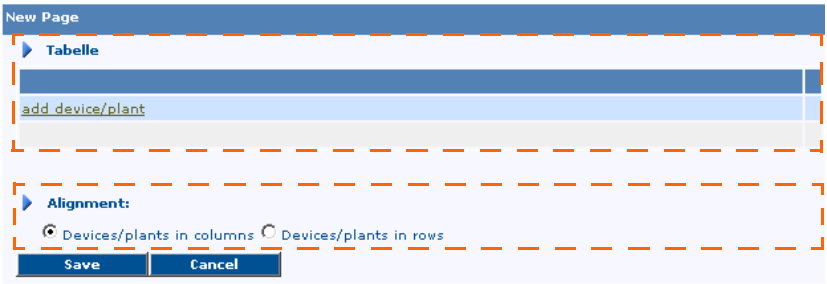
6.2.5.2 Custom

If you have selected the "Custom" table configuration, or if you edit one of the standard configurations, you can specify the content of the table's rows and columns yourself. The page for custom setup of the table opens.

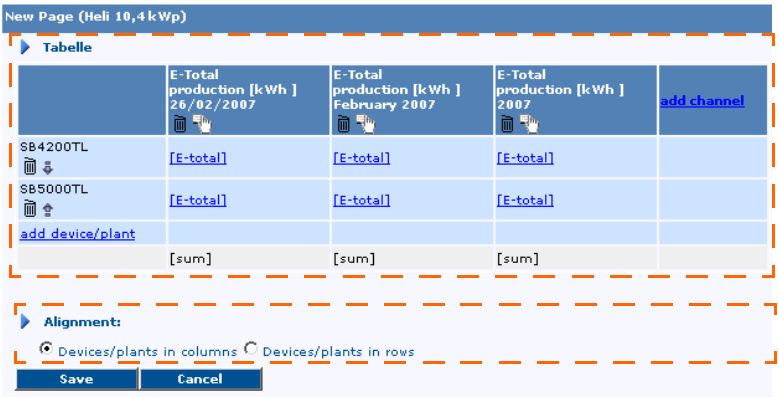
Depending on whether you wish to set up a new custom table, or to edit one of the two standard configurations, the table setup page has a different appearance (see figures).

The following settings are available:

- Adding device / system to the table or removing device / system from the table
- Add channel to the table / remove channel from the table, and configure the channel
- Specifying the layout of the table



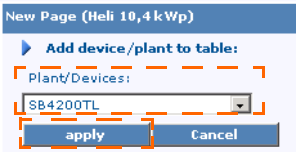
Example: new "Custom" table configuration



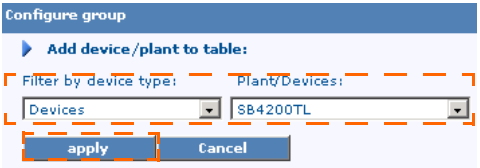
Example: standard configuration "Inverter energy"

Adding/Removing Device/System to the Table

The "System/Devices:" field lets you select whether you want to prepare the data of a system or a specific device for the table (see the normal mode figure).



View in normal mode

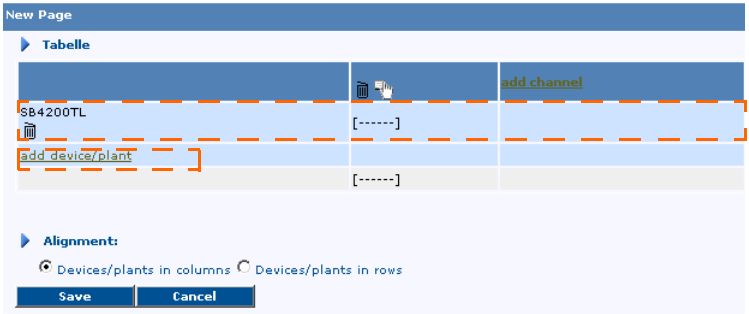


View in expert mode

In expert mode, you can use the "Restrict selection:" field to preselect whether you want the "System/Devices:" field to display the systems, devices or a specific device type for selection. This preselection is helpful for systems with many devices or if more than one system is registered.

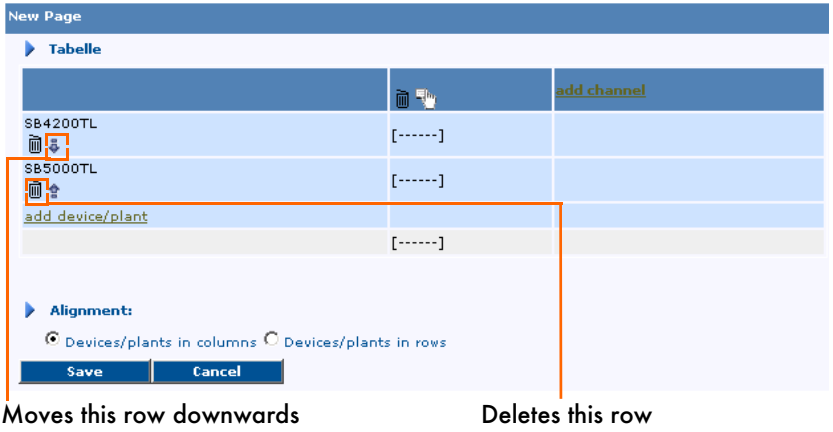
- Display all:
  If this menu item is selected, the systems and the devices corresponding to the currently selected system are available in the field "System / Devices".
- Systems:
  If this menu item is selected, the systems are available in the field "System / Devices".
- Devices:
  If this menu item is selected, all devices corresponding to the currently selected system are available in the field "System / Devices".
- Device type (e.g. WR42MS04@WEBBOX):
  If this menu item is selected, the field "System / Devices" will contain the devices which correspond to this device type.

1. In the field "Restrict selection:", select the data which is to be made available (in expert mode only).
2. In the field "System / Devices:", select the data which is to be made available.
3. Click on <Apply>. The selected device or system is added to the table (see figure).



4. Click on "Add device/system" (see figure above) to add further devices or systems to the table.

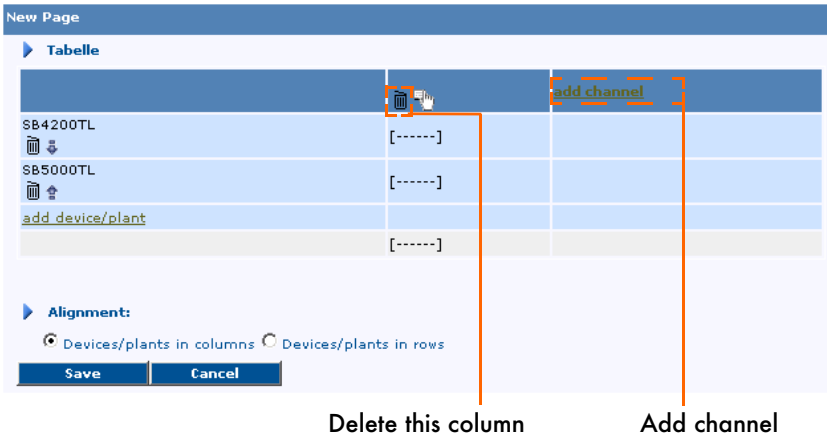
You can change the order of the rows by clicking on the arrow in the row which you wish to move.



You can delete a device or a system from the table by clicking on the trashcan symbol (see figure above). The row is immediately deleted.

Adding or Removing Columns for Channels

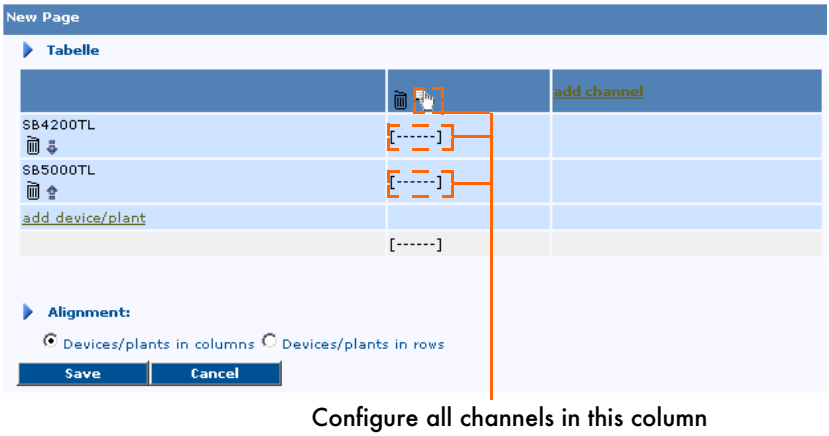
5. If you add a system or device to the table, a column for channels is always automatically added. If you wish to add an additional column, click on <Add channel> (see figure below). In this case, the channel configuration page opens immediately.



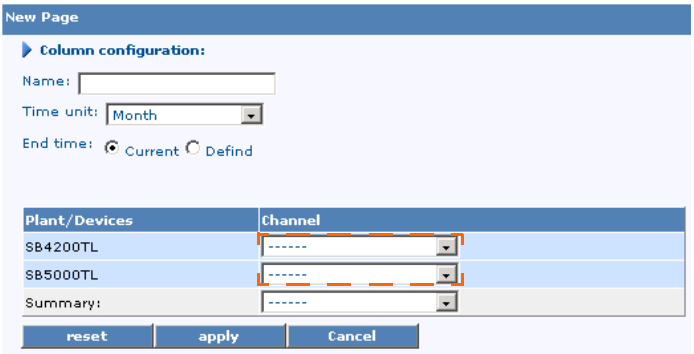
If you wish to delete a column, click on the trashcan symbol in the column which you would like to delete (see figure). The column is immediately deleted.

Configuring Channels

6. Click on the hand symbol in the chosen column in order to configure all channels in that column. You can also click on a channel name in the column (e.g. [Energy]) or [- - -] if no channel has been set.



The channel configuration page of the selected column opens.



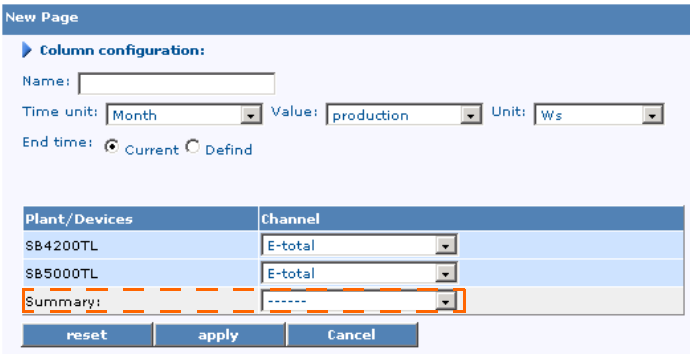
7. Now set the desired channels in the "Channel" drop-down lists in the blue area (see figure).
   If you wish to undo the settings you have made on this page, click on <Reset>.

For devices, all of the channels transferred to Sunny Portal are available in the "Channel" drop-down list. For a system, the four calculated channels are available (CO_2 reduction, Energy, Output, Remuneration).
The unit of the first channel selected determines the additional channels available for selection.

In the "Result" drop-down list (see figure below), you can specify which value is to be calculated from the channels. This only makes sense if you have added more than one device, or more than one system.

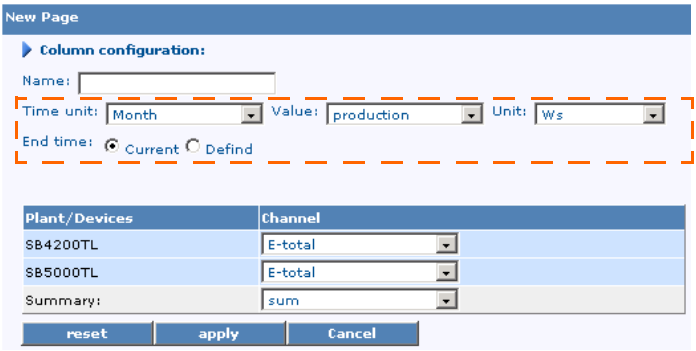
The following settings are possible:

- Sum
  Sum of the channel values
- Min
  Lowest channel value
- Average
  Average channel value
- Max
  Highest channel value



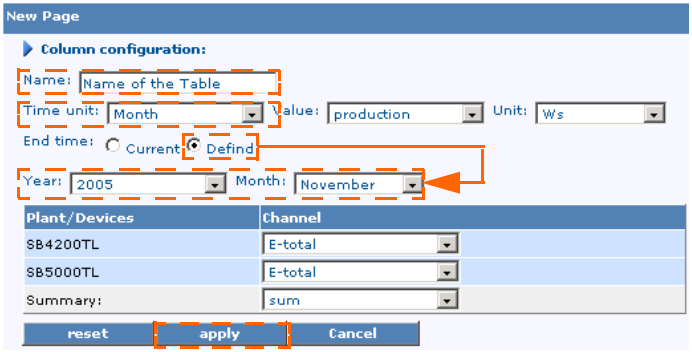
8. In the drop-down list "Result", select the value which is to be calculated from the channel values, and displayed.

Now the "Time unit:", the "Value:", the "Unit:" and the "Last date for display" need to be set.



- Time unit:
  Here, you can specify the period for which the values are to be displayed (hour, day, month, year).
- Value:
  Here, you can set the type of value. The following channel types are available, depending on the channel:
  - Analog values
    - Average values:
      The average value of the channel during the period to be selected.
    - Maximum values:
      The highest value of the channel during the period to be selected.
    - Minimum values:
      The lowest value of the channel during the period to be selected.
  - Meter channels
    - Meter change
      The increase within the period to be selected.
    - Meter reading
      The current total meter reading of the value.
    - Cumulative change
      The total increase within the period to be selected.
- Unit:
  This allows you to select the unit in which the value is to be displayed. Different units are available, depending on the value selected.

- Last date for display:
  Here, you can specify whether the values, for example, should always correspond to the current year, month or day. Alternatively, you can determine a particular year, month or day.
  - Current: the values from the current date (e.g. current day, current month) will always be displayed.
  - Selectable: you can define the date for which you want to display values based on the set time unit (e.g. for "Month": November 2005; for "Day": November 18, 2005; or for "Hour": October 23, 2005 at 3:00 p.m.).



Sample figure with "Month" and last date "Selectable"

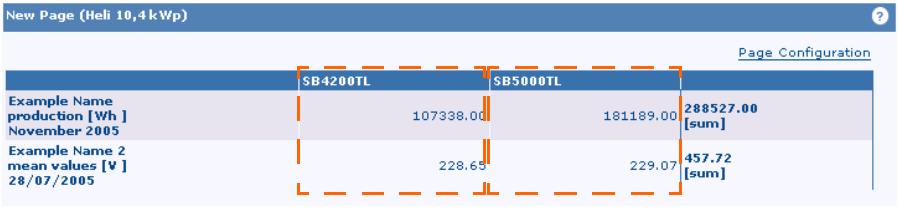
9. Set all values as desired.
10. In the "Name:" field, you can type in a name for the column. The name will then be displayed in the table as the heading for that column.
11. Afterwards, click on <Apply> to save the settings. The page for setting up the table is displayed again. Now you can configure further channels in columns and subsequently set up the layout of the table as follows:

Configured channels are shown in gray on the table setup page.

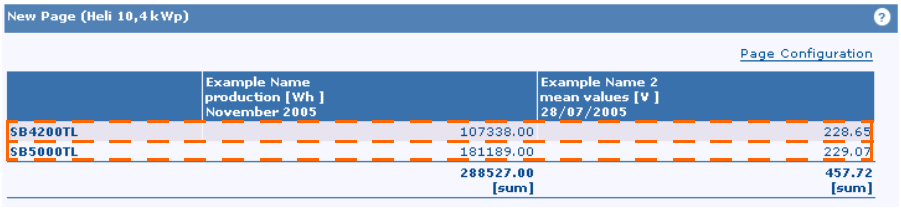
Specifying the Layout of the Table

You can choose between two layouts:

- Devices / systems in columns
- Devices / systems in rows

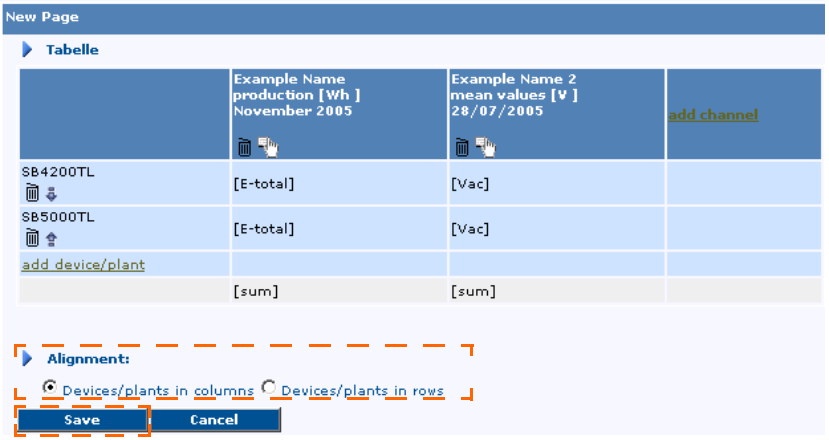


Example: devices / systems in columns



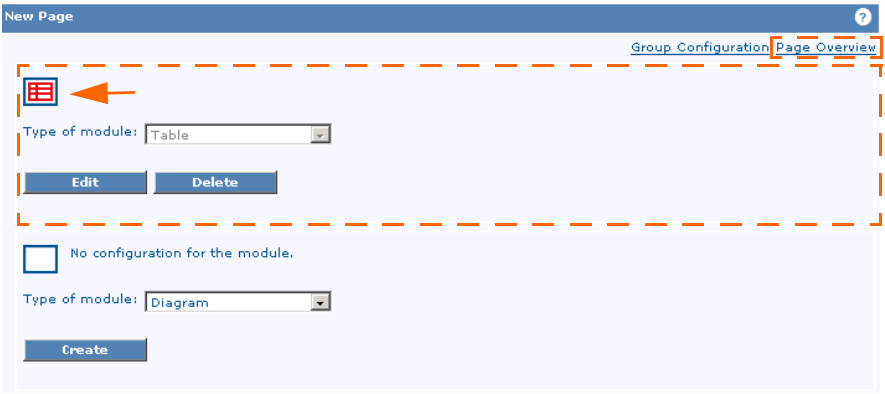
Example: devices / systems in rows

12. If you wish to change the table layout, click on the radio button alongside the desired layout (see figure below).

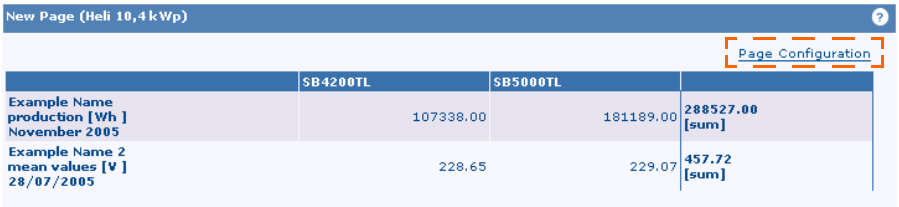


13. Then click on <Save>.

The page for editing the page layout is displayed again. The symbol (see arrow) indicates that the module type "Table" has been selected for this area.



14. Click on "Page view" (see figure above) to view the page.



15. Click on "Page configuration" if you wish to call up the page which allows editing of the page layout, in order to carry out changes to the page areas, or to set up further areas.

6.3 System-specific Standard Pages

System-specific standard pages are pages that Sunny Portal creates automatically the first time your system data is sent. The "Visualization" menu lists the system-specific standard pages. The figure on the right shows all system-specific standard pages.

You can also create these pages manually using the "Configuration/Visualization" menu option if you delete a system-specific standard page or if you want to create a page later, for example when retrofitting a Sunny SensorBox. Pages with the most important data can then be accessed quickly and easily. You can also modify and delete these pages.

Sunny Portal contains the following system-specific standard pages:

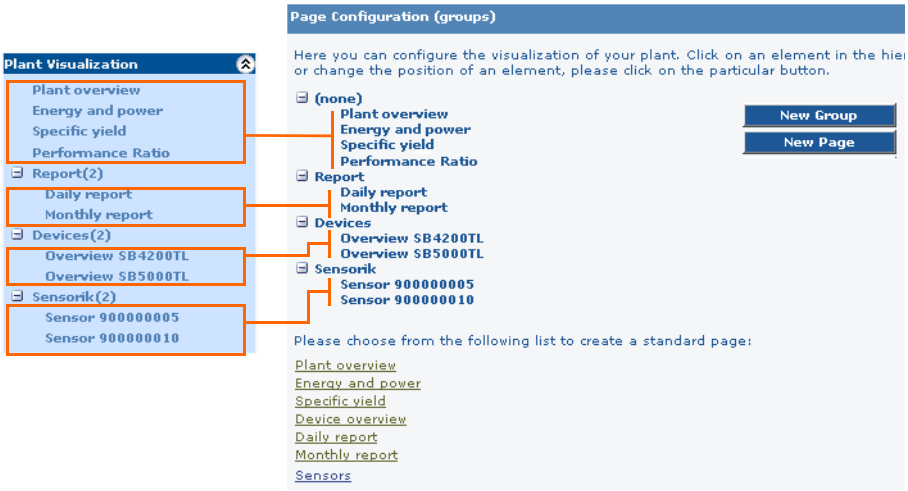
- Overview
- Energy and Power
- Specific System Yield
- Performance Ratio (only if you have a Sunny SensorBox or if you have assigned an irradiation channel for the "Performance Ratio" calculated channel; see “Setting the Performance Ratio" on page 120).
- Device overview
- Daily system report
- Monthly system report
- Sensors (only if you have a Sunny SensorBox)

The "Performance Ratio" and "Sensors" system-specific pages are only displayed when your communication device sends irradiation and temperature sensor data to the Sunny Portal.

When the first Sunny SensorBox for a system is added to the Portal, the "Sensors" group is created automatically and a separate page for each connected sensor is created. The "Performance Ratio" page is also created automatically, and the "Performance Ratio" calculated channel is configured automatically.

When you add additional Sunny SensorBox devices for a system to the Portal, the channel list changes or you replace a Sunny SensorBox, the "Performance Ratio" page is not automatically updated. You must update the "Performance Ratio" calculated channel manually.

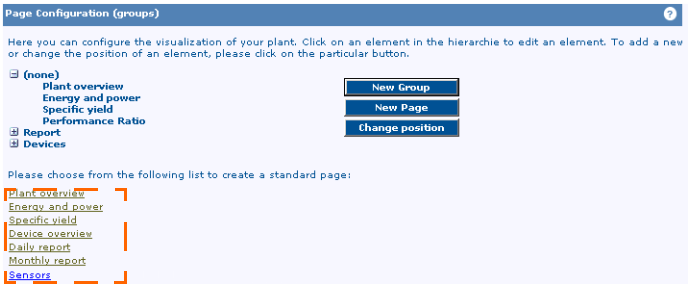
All system-specific pages and pages you create are displayed as a new option in the "Visualization" menu.



If, for example, you create a system-specific page called "Daily system report" or "Monthly system report", the "Report" submenu option in the "Visualization" menu is automatically created with one of the system-specific report pages (see figure above).

Creating System-specific Standard Pages

1. Click on "Configuration / Visualization".
   The "Page Configuration (Groups)" page opens.


Page Configuration (groups)
Here you can configure the visualization of your plant. Click on an element in the hierarchie to edit an element. To add a new or change the position of an element, please click on the particular button.
(none)
Plant overview
Energy and power
Specific yield
Performance Ratio
Report
Devices
New Group
New Page
Change position
Please choose from the following list to create a standard page:
Plant overview
Energy and power
Specific yield
Device overview
Daily report
Monthly report
Sensors

2. Click on the name of the page you want to create (see figure above). A message appears to notify you that the page has been successfully saved. You can then click on the page in the "Visualization" menu.

6.4 Sharing Pages

You can share individual pages of your Sunny Portal site, so that they can be viewed by other Internet users.

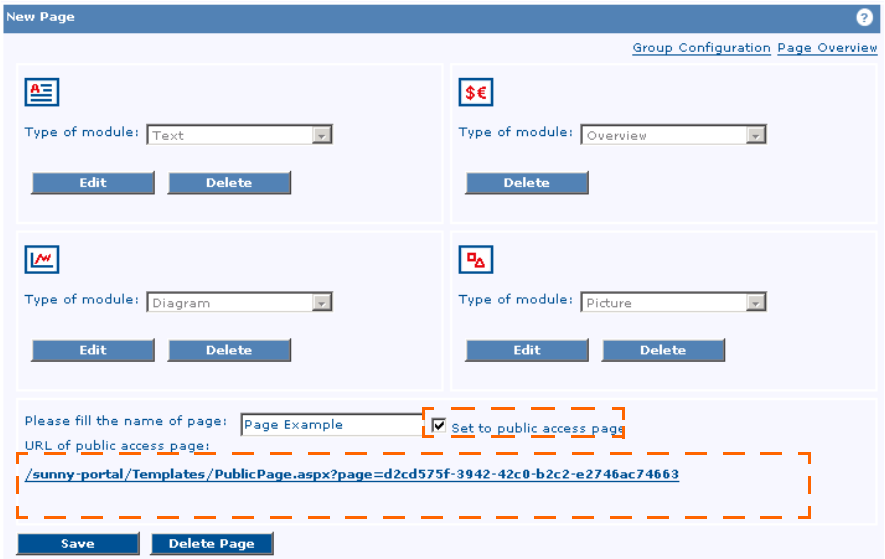
Using the page's own URL (Internet address), you can provide a link to the page on any website.

Once you have shared a page, your system will also automatically be listed on the Sunny Portal homepage under the menu item "Shared Systems". If you click on your system in the list, a new window opens, in which all your shared pages can be seen.

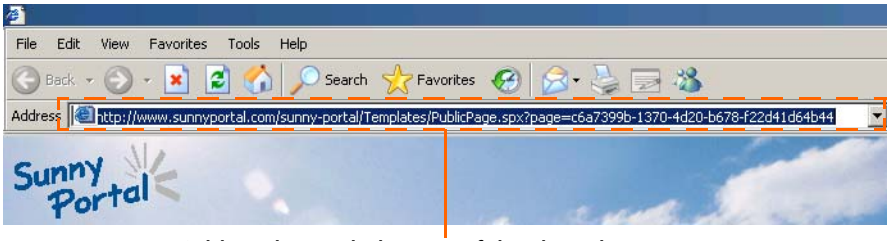
1. In the "Visualization" menu, click on the name of the page which you would like to share. The corresponding page opens.
2. Click on "Page configuration".

The page for editing the page layout opens.

3. Click in the "Share page" checkbox, to share the page by inserting a check mark. The URL (Internet address) of the page is displayed once you have shared the page (see figure).
   You can use this URL to insert a link to your shared page on another website.



4. In order to comfortably copy the URL into a web design program (e.g. Microsoft Office FrontPage), click on the URL. The shared page opens in a new window.



Address bar with the URL of the shared page

5. Now click in the address bar in the window of the shared page, and copy the URL. Subsequently, you can paste the URL into the program as a link.
6. Close the window of the shared page.
7. Click on <Save> to apply the setting.

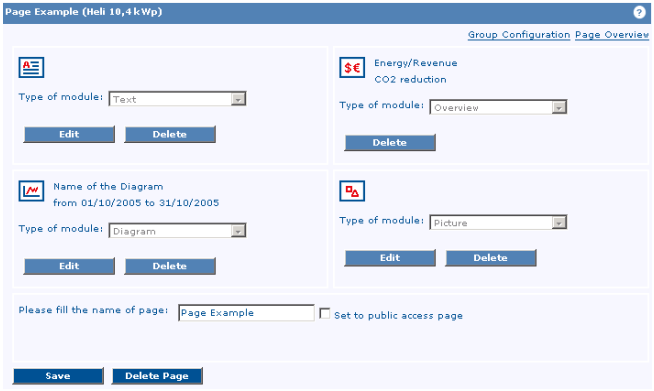
6.5 Editing Pages

6.5.1 Altering Pages

1. In the "Visualization" menu, click on the page which you would like to edit. The selected page opens.
2. Click on "Page configuration".

You can also select the pages which you would like to edit via the menu "Configuration / Visualization".

The page for editing the page layout of the selected page opens.



Example: page for editing the page layout

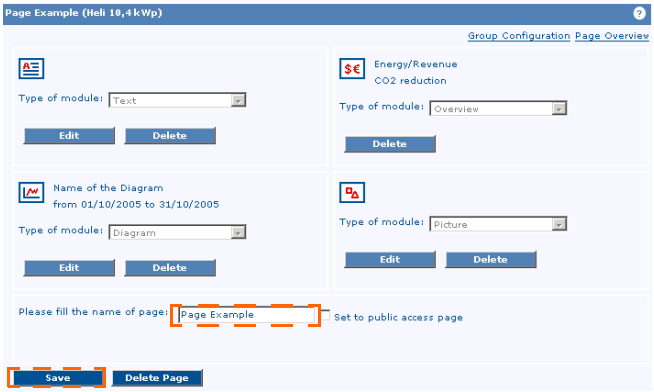
3. Now you can alter the page as follows:
   - If you wish to edit a particular area of the page, click on <Edit> in the relevant area.
     If you wish to set up another module type, you must first delete the previously set module type. Set the desired module type as described in section "Selecting the Module Type" on page 31.
   - If you wish to leave a particular area of the page empty, click on <Delete> in the relevant area.
4. If you wish to save the settings, click on <Save>.
   If you wish to delete the entire page, click on <Delete Page>. The page is immediately deleted. The "Page Configuration (Groups)" page opens, where you can create a new page.

6.5.2 Changing the Page Name

1. In the "Visualization" menu, click on the page which you would like to edit. The selected page opens.
2. Click on "Page configuration".

You can also select the pages which you would like to edit via the menu "Configuration / Visualization".

The page for editing the page layout of the selected page opens.



Example: page for editing the page layout

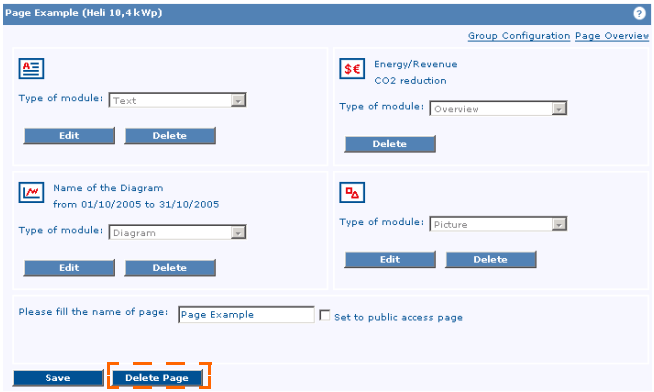
3. In the field "Please type in the page name:", type in the desired page name (see figure).
4. Click on <Save>.

6.5.3 Deleting Pages

1. In the "Visualization" menu, click on the page which you would like to edit. The selected page opens.
2. Click on "Page configuration".

You can also select the pages which you would like to edit via the menu "Configuration / Visualization".

The page for editing the page layout of the selected page opens.



Example: page for editing the page layout

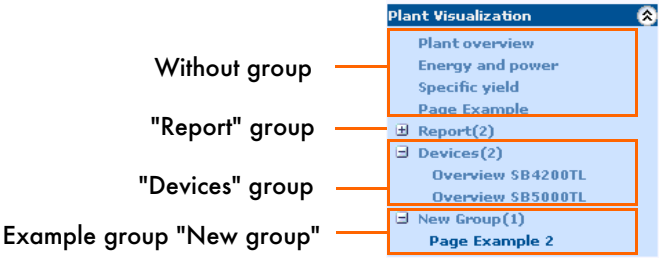
3. Click on <Delete Page>. The page is immediately irrevocably deleted. The "Page Configuration (Groups)" page opens, where you can create a new page.

6.6 Arranging Pages in the "Visualization" Menu

This section explains how to create new groups or delete groups, assign pages to a group, and change the positions of pages and groups.

In the "Visualization" menu, you can change the positions of pages and groups, and arrange the pages in groups, in order to make it easier to acquire an overview of the navigation. Sunny Portal creates the "Devices" group by itself, which contains the overview pages of your inverters.

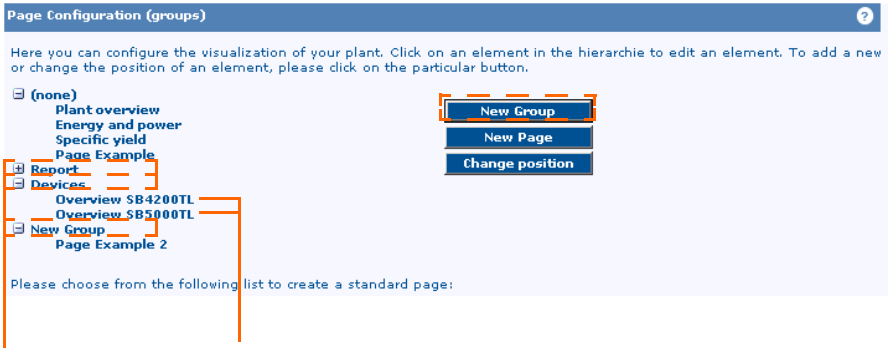
The number in brackets alongside the group name indicates how many pages are assigned to the group.



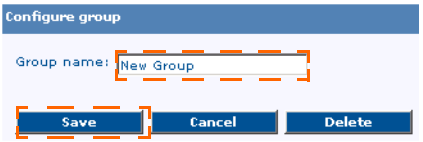
6.6.1 Creating New Groups

To create a new group, you must first assign a group name, then assign pages to the group (see finished sample figure below). The pages are assigned to the groups by changing the page position, as described in section “Changing the Positions of Pages and Groups" on page 70.

1. In the "Configuration" menu, click on "Visualization".
   The "Page Configuration (groups)" page opens (see figure).
2. Click on <New Group>.

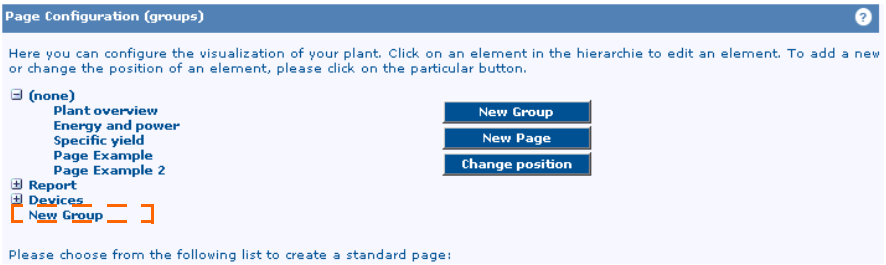

Page Configuration (groups)
Here you can configure the visualization of your plant. Click on an element in the hierarchie to edit an element. To add a new or change the position of an element, please click on the particular button.
(none)
Plant overview
Energy and power
Specific yield
Page Example
Report
Devices
Overview SB4200TL
Overview SB5000TL
New Group
Page Example 2
New Group
New Page
Change position
Please choose from the following list to create a standard page:
Group name
Pages assigned to the "Devices" group

The "Group Configuration" page opens (see figure to the right).



3. In the field "Group name", type in the desired name for the new group.
4. Click on <Save> to apply the setting.

The "Group Configuration" page is displayed. The group which you have just created appears as the last in the list (see figure below). The same order is applied in the "Visualization" menu.


Page Configuration (groups)
Here you can configure the visualization of your plant. Click on an element in the hierarchie to edit an element. To add a new or change the position of an element, please click on the particular button.
(none)
Plant overview
Energy and power
Specific yield
Page Example
Page Example 2
Report
Devices
New Group
New Group
New Page
Change position
Please choose from the following list to create a standard page:

Now you can assign the desired pages to this group by changing the page positions, as described in section “Changing the Positions of Pages and Groups" on page 70.

6.6.2 Deleting Groups

If you delete a group, all the subpages assigned to the group will also be deleted!

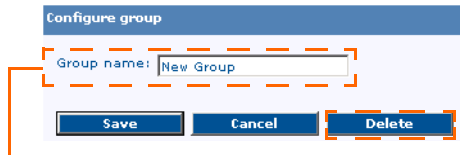
1. In the "Configuration" menu, click on "Visualization".
   The "Page Configuration (Groups)" page opens (see figure).
2. Click on the name of the group which you would like to delete.

Page Configuration (groups)
Here you can configure the visualization of your plant. Click on an element in the hierarchie to edit an element. To add a new or change the position of an element, please click on the particular button.
(none)
Plant overview
Energy and power
Specific yield
Page Example
Report
Devices
Overview SB4200TL
Overview SB5000TL
New Group
Page Example 2
New Group
New Page
Change position
Please choose from the following list to create a standard page:

Example group name

The "Group Configuration" page opens (see figure to the right).

3. To irrevocably delete the entire group and all of its subpages and all of the subpages assigned to the group, click on <Delete>.



Group which will be deleted

6.6.3 Changing the Positions of Pages and Groups

You can change the order of pages and groups as they appear in the "Visualization" menu. This means you can create your own structure for the "Visualization" menu, and arrange your pages.

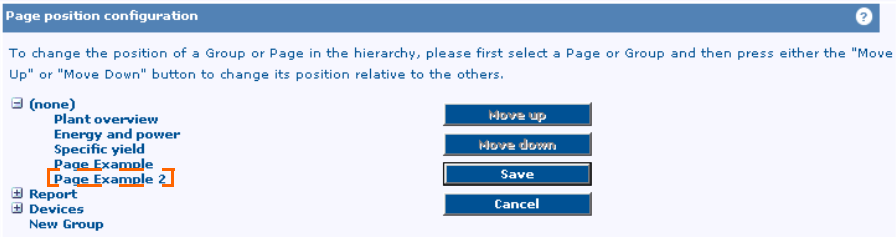
Groups are moved as groups, together with the subpages assigned to them. The position of the "(Without group)" group cannot be changed; it always remains in first place.

1. In the "Configuration" menu, click on "Visualization".
   The "Page Configuration (Groups)" page opens.
2. Click on <Change Position>.

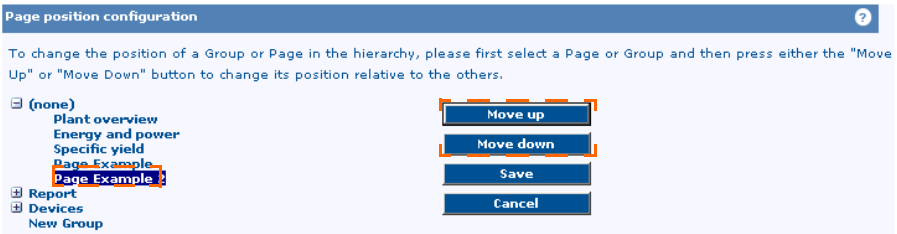
Page Configuration (groups)
Here you can configure the visualization of your plant. Click on an element in the hierarchie to edit an element. To add a new or change the position of an element, please click on the particular button.
(none)
Plant overview
Energy and power
Specific yield
Page Example
Page Example 2
Report
Devices
New Group
New Group
New Page
Change position

The "Configuration of Page Position" page opens. The <up> and <down> buttons are still shaded in gray, because the page to be moved must first be selected.

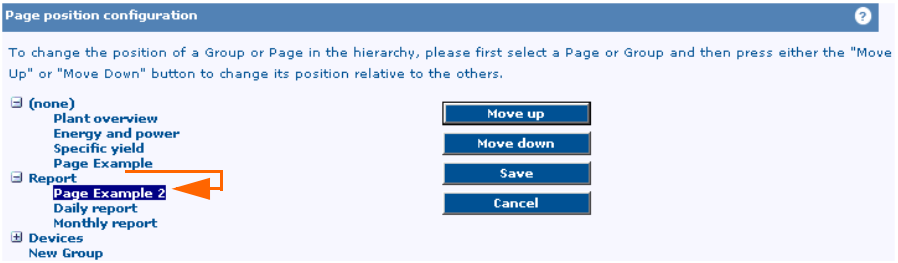
3. Click on the name of the page or group, the position of which you would like to change (in this example, the page "Example page 2" is selected).


Page position configuration
To change the position of a Group or Page in the hierarchy, please first select a Page or Group and then press either the "Move Up" or "Move Down" button to change its position relative to the others.
(none)
Plant overview
Energy and power
Specific yield
Page Example
Page Example 2
Report
Devices
New Group
Move up
Move down
Save
Cancel

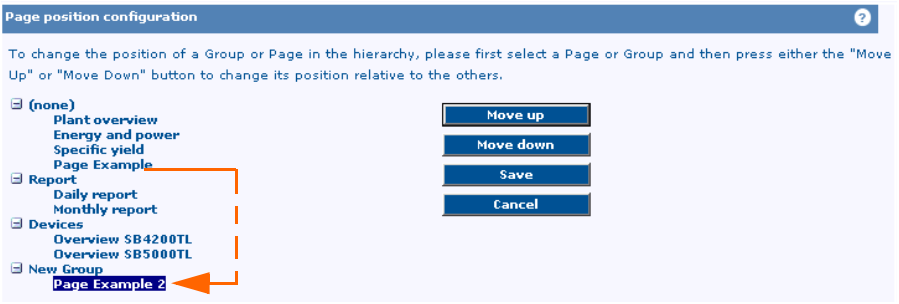
The name of the page or group which you have selected is marked in blue (see example pictured below). The <up> and <down> buttons are now available.


Page position configuration
To change the position of a Group or Page in the hierarchy, please first select a Page or Group and then press either the "Move Up" or "Move Down" button to change its position relative to the others.
(none)
Plant overview
Energy and power
Specific yield
Page Example
Page Example 2
Report
Devices
New Group
Move up
Move down
Save
Cancel

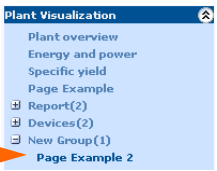
4. Click on <up> or <down>, according to the direction in which you wish to move the page (in this example, <down> is clicked, in order to move "Example page 2" downwards).
   The pages are always moved just one step upwards or downwards.


Page position configuration
To change the position of a Group or Page in the hierarchy, please first select a Page or Group and then press either the "Move Up" or "Move Down" button to change its position relative to the others.
(none)
Plant overview
Energy and power
Specific yield
Page Example
Report
Page Example 2
Daily report
Monthly report
Devices
New Group
Move up
Move down
Save
Cancel

5. Click on <up> or <down> as often as necessary, until the page has reached the desired position.



6. Then click on <Save>.
   The change of position has now been applied in the "Visualization" menu (see example pictured).



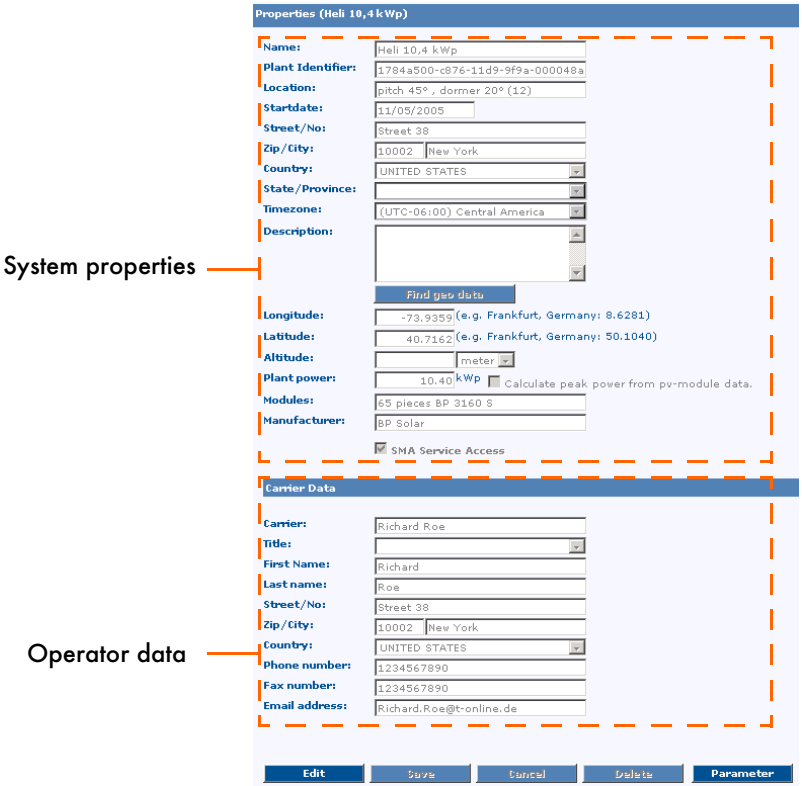
7 System Settings

7.1 Selecting a System

If you have registered more than one system at Sunny Portal, you can select the desired system by clicking on it in the "System Selection" menu. The name of the currently selected system is always shown in bold.

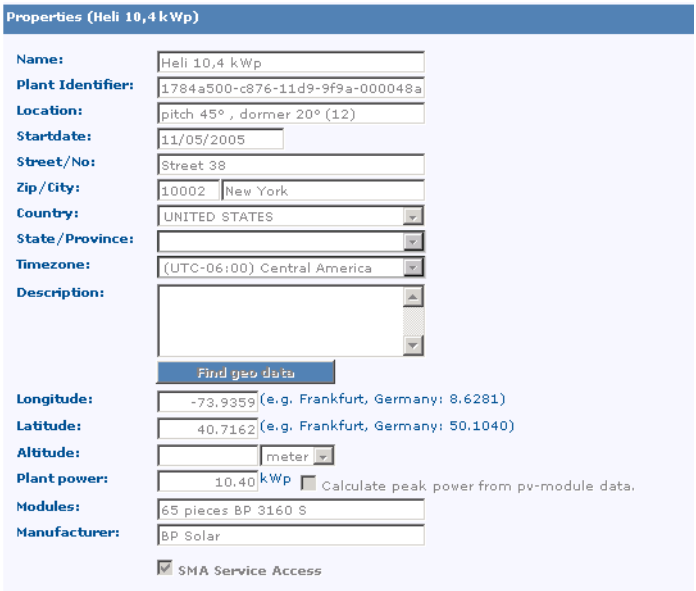
7.2 Opening/Modifying System Properties

1. If you have registered more than one system on your Sunny Portal page, in the "System Selection" menu select the system whose properties you want to open or modify.
2. Select "Configuration / System Properties".
   The "Properties" page opens.



3. Click on <Edit> at the bottom of the page to modify the settings.

The following system properties will be displayed and can be edited and set.



- Name:
  Name of the current system. The system identifier is the default system name. You are free to change the system name (see section “Changing the System Name" on page 76.
- System identifier:
  In the example the system identifier stands for the system currently selected. The system identifier is defined when you register the system.
- Location:
  Enter any information on the system's location properties.
- Commissioning:
  Define the system's commissioning date using the calendar icon (see the figure on the right).

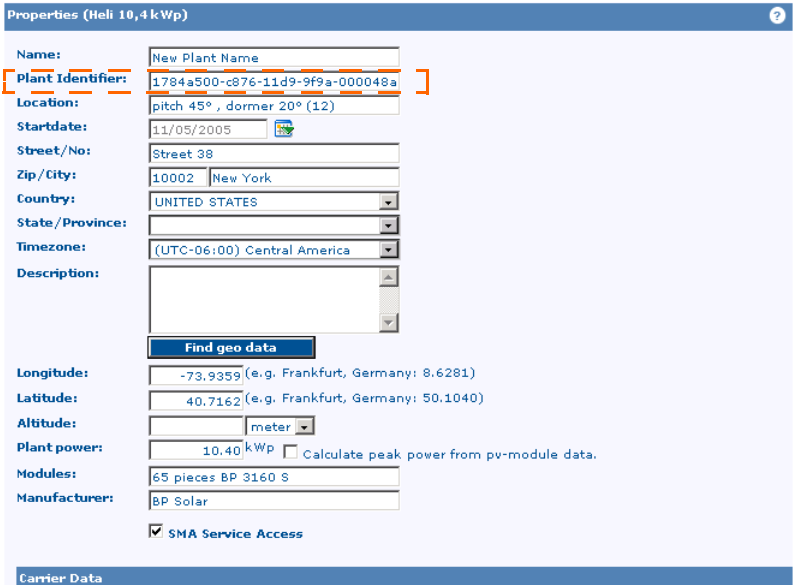
- Street/No.:
  Enter the street address where the system is located.
- Zip code/City:
  Enter the zip code and city where the system is located.
- Country:
  Enter the country where the system is located.

- Federal state:
  Enter the federal state where the system is located.
- Time zone:
  Select the time zone.
- Description:
  Enter comments for the system.
- Search geodata:
  When you click on the <Search Geodata:> button, geodata for the location information is entered automatically from the database.
  - Longitude
  - Latitude
  - Height
- System output:
  You can enter your system's total output (kWp= kilowatt peak) in the "System Output" field or select the "Calculate system output from string outputs" field.
  - Calculate system output from string outputs
    If you select this checkbox, the system output is calculated from the string output. You must first define the strings and supply phase as described in sections “Setting the Supply Phase" on page 91 and “Setting the String Connections" on page 92.
- Module type:
  Enter information on the module type.
- Manufacturer:
  Enter information on the module manufacturer.
- SMA service access:
  Select this field to allow SMA service to access your page in accordance with the Sunny Portal general terms and conditions.

7.3 Changing the System Name

You can assign your systems practical names, in order to better distinguish between different systems on your Sunny Portal page.

1. If you have registered more than one system at Sunny Portal, first select the desired system in the "System Selection" menu. Only the currently selected system can be renamed.
2. Select "Configuration / System Properties".
   The "Properties" page opens.
3. Click on <Edit> at the bottom of the page.
4. In the "Name:" field, type in the desired name for your system (e.g. Smith House or WebBox System South).

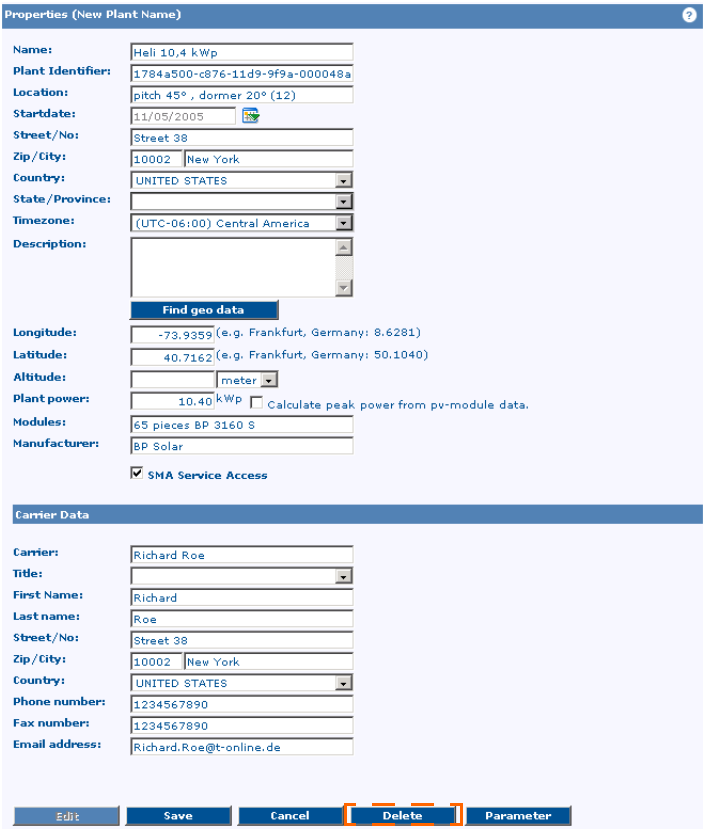


5. To save the new system name, click on <Save> at the bottom of the page.
6. Click on a menu item in the navigation area so that the page refreshes, and the system name is applied. The changed system name will then be displayed in the main menu item "System Selection" (see figure).

7.4 Deleting Systems

If you delete a system, all devices and data related to this system are deleted! You cannot undo the delete process!

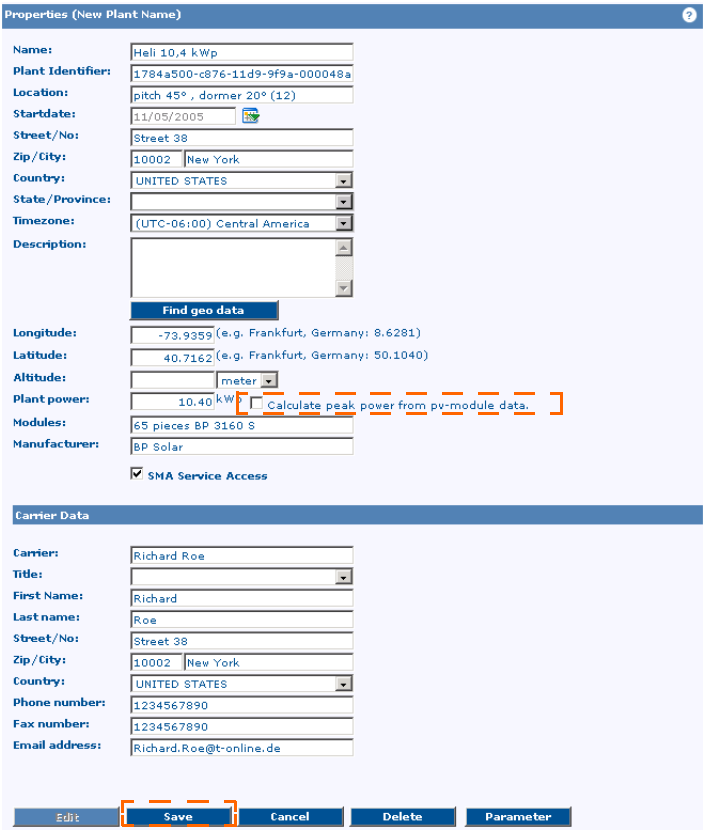
1. If you have registered more than one system at Sunny Portal, first select the desired system in the "System Selection" menu. Only the currently selected system can be deleted.
2. Select "Configuration / System Properties".
   The "Properties" page opens.



3. To delete the selected system, click on <Delete>. Subsequently, a confirmation prompt appears. If you really wish to delete the system irrevocably, click on <Yes>.

7.5 Peak System Output from String Output

1. If you have registered more than one system at Sunny Portal, first select the desired system in the "System Selection" menu. You can define settings only for the system currently selected.
2. Select "Configuration / System Properties".
   The "Properties" page opens.
3. Click on <Edit> at the bottom of the page.

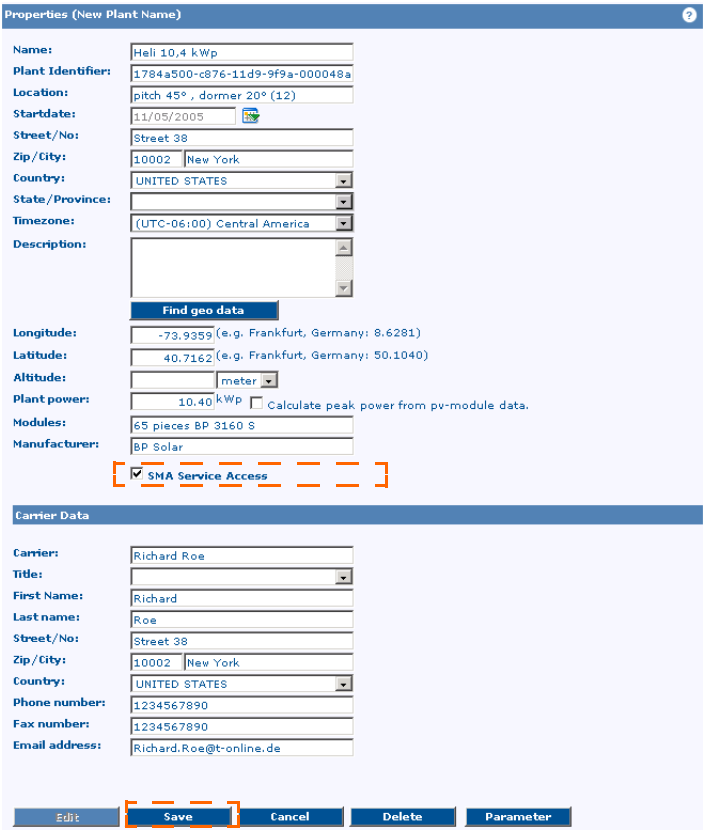


4. Select or clear the selection for the "Calculate system output from string output" field. If you select the checkbox, the system output is calculated from the string output. If you clear the selection, you must enter the system output manually in the "System Output:" field.
5. Click on <Save>.

7.6 Activating / Deactivating SMA Service Access

You can specify whether SMA service is to have access to your data as mentioned in the Sunny Portal general terms and conditions. This access allows SMA service to assist you quickly should you have questions regarding your Sunny Portal page, or to advise you if failures arise in your photovoltaic system.

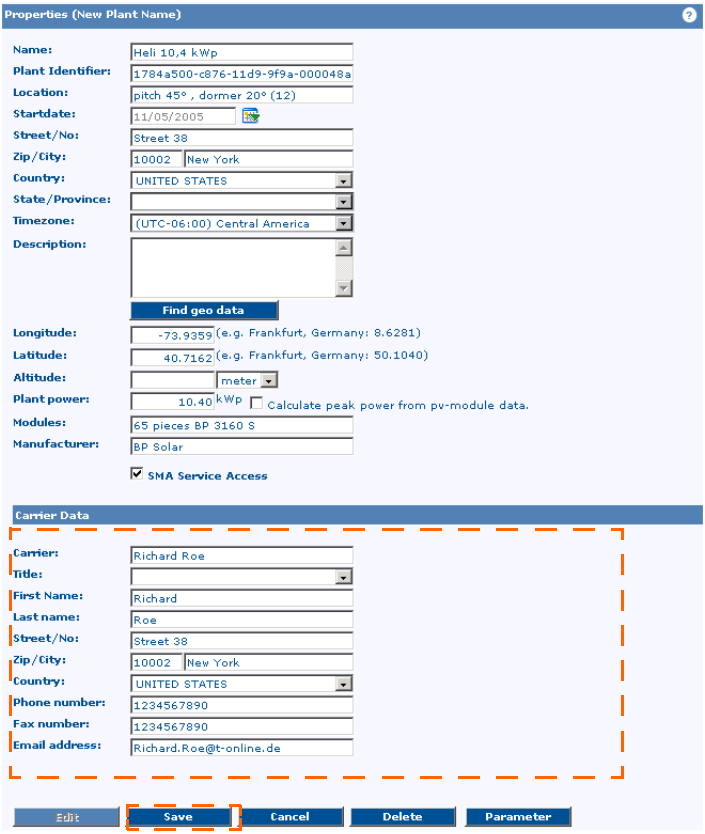
1. Select "Configuration / System Properties".
   The "Properties" page opens.
2. Click on <Edit> at the bottom of the page.



3. Add or remove the check mark in the "Access by SMA service" checkbox. If you add the check mark, you grant SMA service access to your data.
4. Click on <Save>.

7.7 Changing Operator Data

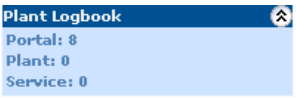
1. If you have registered more than one system at Sunny Portal, first select the desired system in the "System Selection" menu. You can only change the operator data for the system currently selected.
2. Select "Configuration / System Properties".
   The "Properties" page opens.
3. Click on <Edit> at the bottom of the page.



4. Change the operator data as required.
5. Click on <Save>.

7.8 System Log

Messages from the portal, from your system, and from SMA service are shown in the system log. These messages help you, for example, to identify failures which occur in your system. The number after the colon indicates the number of messages.



Portal

Messages from the Sunny Data Control software and from the Sunny WebBox are shown here. The messages include, for example, information regarding the transfer of your system data to Sunny Portal.

System

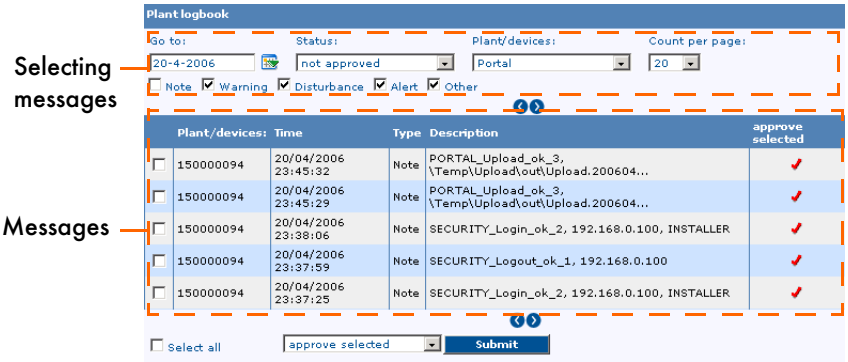
Messages regarding the system devices (e.g. inverters) are shown here. The messages consist of status reports and error messages from the inverters.

Service

Service messages (user information) are shown here.

The following message types are available in the system log:

- Info
- Warning
- Failure
- Error
- Other



Example page from the system log with messages

7.8.1 Selecting Messages

If you click on a system log page (Portal, System, Service) in the "System Log" menu, the messages of the chosen page will be displayed. From each of these pages, you can also select which messages are to be displayed.

The following settings are available:

- Go to:
  Here, you can select the date of the day from which the messages are to be displayed.

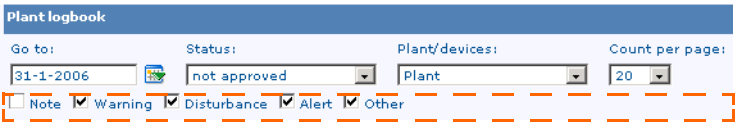
- Status:
  - Not confirmed
    All messages which you have not confirmed are displayed (standard setting).
  - Confirmed
    All messages which you have confirmed are displayed.
  - All
    All confirmed and unconfirmed messages are displayed.

- System / Devices:
  - All
    Messages from the portal, from the system, from service, and from the devices are displayed.
  - Portal
    Only messages from the portal are displayed.
  - System
    Only messages from the currently selected system are displayed.
  - Service
    Only messages from the service are displayed.
  - Devices (e.g. SB4200TL)
    Only messages regarding this device are displayed.

- Number per page:
  This allows you to select how many messages are to be displayed per page.

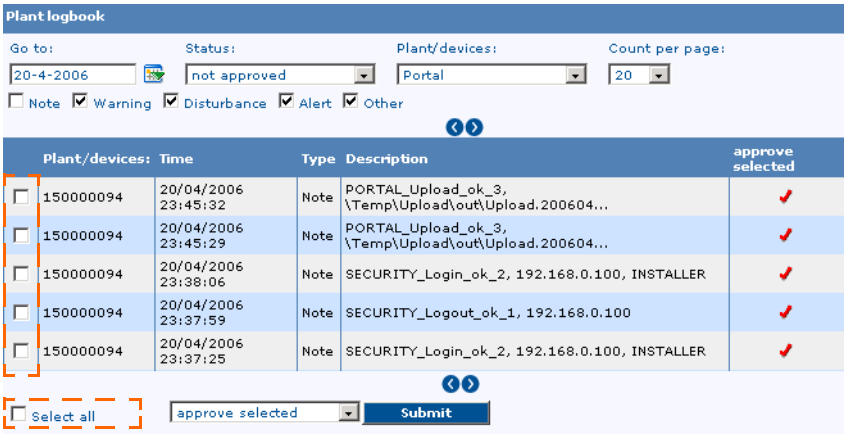
Insert a check mark in the checkbox to the left of the desired message type for these messages to be displayed. The following message types are available:

- Info
- Warning
- Failure
- Error
- Other



7.8.2 Confirming Messages

You can confirm messages in order to mark them as read. This makes it easier for you to differentiate between messages which you have already read, and new messages.



Confirming Individual Messages

1. Select the messages which you wish to confirm, by clicking on the checkbox alongside the message (see figure). To select all the messages on display, click on the checkbox alongside "Mark all" (see figure).
2. Click on <Submit>.

You can confirm individual messages immediately by clicking on the red check mark in the "Confirm selection" column.

Confirming All Messages

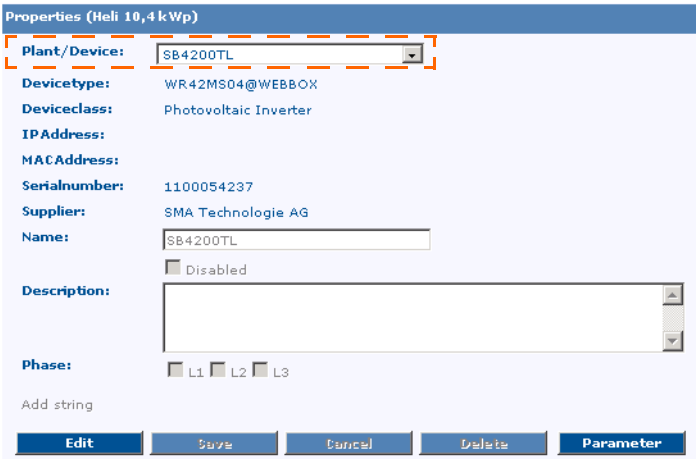
You can confirm all messages in the system log (including those which are not currently on display).

1. Select "Confirm all" in the drop-down list.
2. Click on <Submit>.

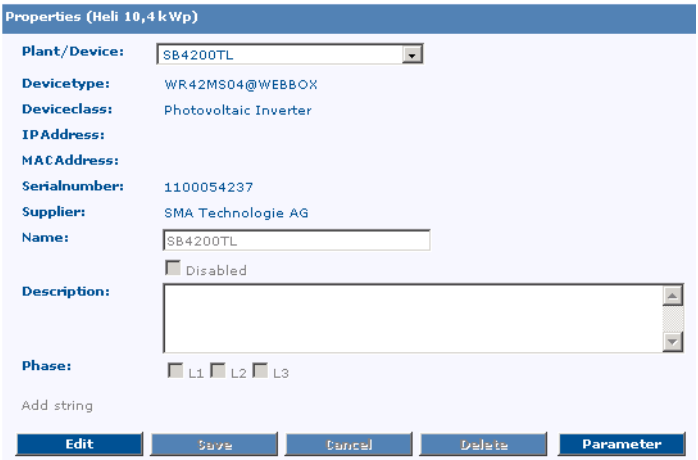
8 Device Settings

8.1 Accessing the Device Properties

1. Select "Configuration / Device Properties".
   The "Properties" menu opens.
2. In the "Device:" drop-down list, select the device whose properties you want to display.



The following properties will be displayed and can be edited and set.

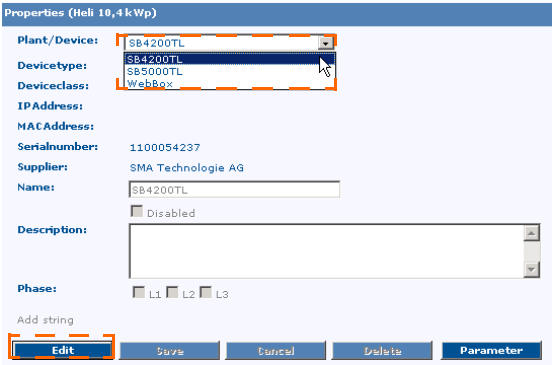


- Device:
  Device name.
- Device type:
  (e.g. WR42MS04@WEBBOX) DeviceType@CommunicationDevice.
  In this example, an inverter whose data is transmitted by a Sunny WebBox to the Portal.
- Device class:
  (e.g. photovoltaic inverter)
- IP address:
  (Currently only displayed for Sunny WebBox.
  If you click on the IP address, you can call up your Sunny WebBox user interface directly. In order to do this, you must first activate the Sunny WebBox IP address at your router. Please refer to your router's user manual for instructions on how this is to be achieved.)
- MAC address:
  (Currently only displayed for Sunny WebBox)
- Serial number:
  (e.g. 1100054237)
- Manufacturer:
  (Manufacturer of the inverter)

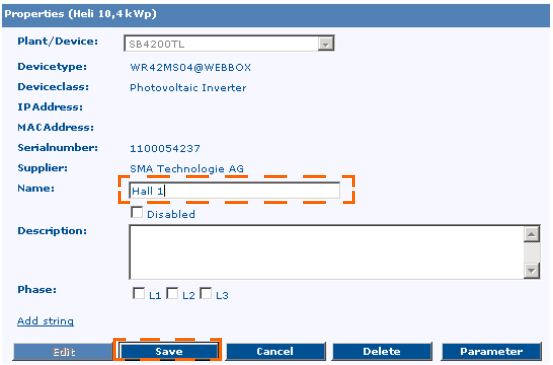
- Name:
  Displays the name of the device. The serial number is the default device name. You can change the device name (see the next section, “Changing the Device Name" on page 88).
- Deactivated:
  If you select this checkbox, the device along with its data is no longer displayed on your Sunny Portal page.
- Description:
  Enter comments for the device.
- Phase:
  Enter the inverter supply phase.
- Add String:
  If you click on "Add String", you can set the strings connected to the inverter.

8.2 Changing the Device Name

1. Select "Configuration / Device Properties".
   The "Properties" page opens.



2. In the "Device:" drop-down list, select the device whose name you want to change.
3. Click on <Edit>.

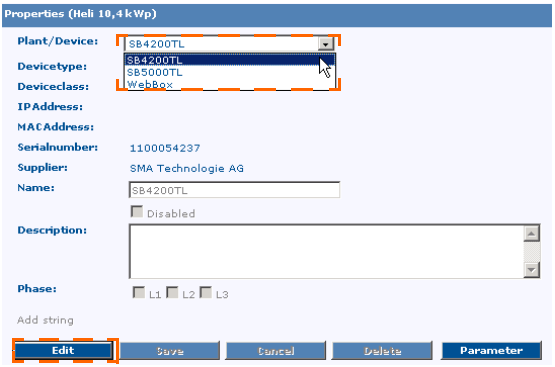


4. Type the desired name into the "Name" field.
5. Click on <Save> to save the settings.

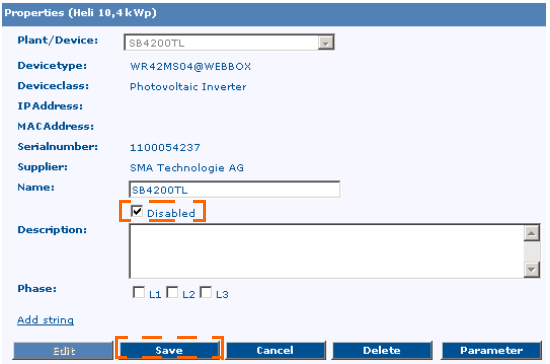
8.3 Deactivating Devices

You can deactivate devices (such as inverters and communication devices) on the Sunny Portal. The device and its data are then no longer displayed or processed on the Sunny Portal. The device data is then no longer available for channel calculations.

1. Select "Configuration / Device Properties".
   The "Properties" page opens.



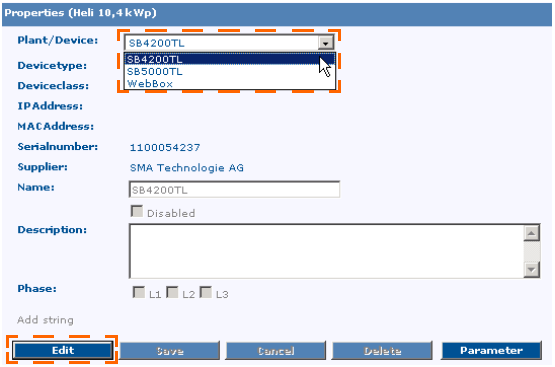
2. In the "Device:" drop-down list, select the device you want to deactivate.
3. Click on <Edit>.



4. Click on the "Deactivate" field to select it.
5. Click on <Save> to save the settings and deactivate the device.

8.4 Deleting a Device

1. Select "Configuration / Device Properties".
   The "Properties" page opens.

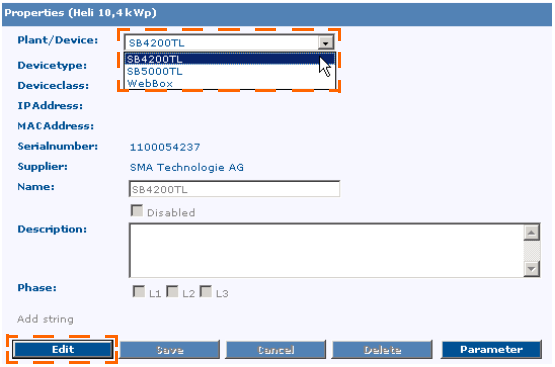


2. In the "Device:" drop-down list, select the device you want to delete.
3. Click on <Edit>.
4. To delete the selected device, click on <Delete>.
   Subsequently, a confirmation prompt appears. If you really wish to delete the device irrevocably, click on <Yes>.

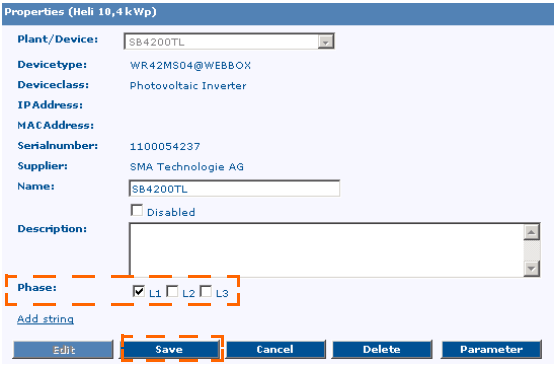
8.5 Setting the Supply Phase

You can select the inverter supply phase.

1. Select "Configuration / Device Properties".
   The "Properties" page opens.



2. In the "Device:" drop-down list, select the inverter whose supply phase you want to set.
3. Click on <Edit>.

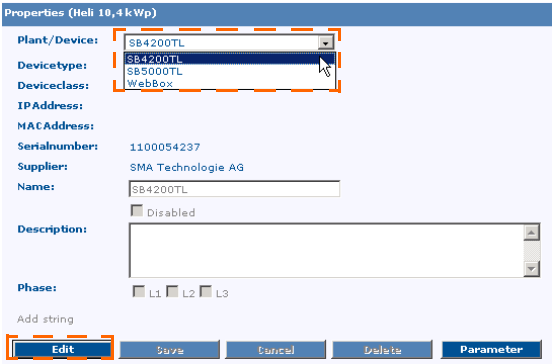


4. To select one of the three "Phase:" fields, click on the checkbox for the required phase.
5. Click on <Save> to apply the setting.

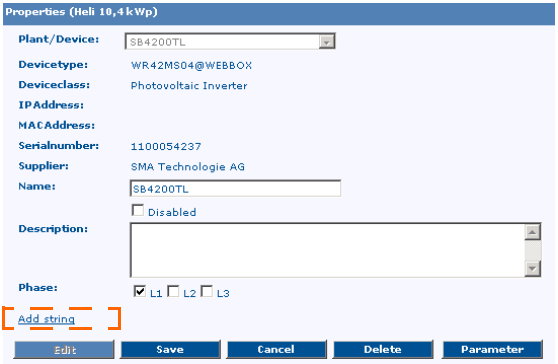
8.6 Setting the String Connections

You can set a string inverter for each string.

1. Select "Configuration / Device Properties".
   The "Properties" page opens.

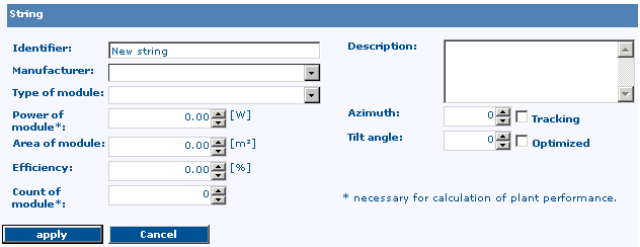


2. In the "Device:" drop-down list, select the string inverter whose strings you want to set.
3. Click on <Edit>.



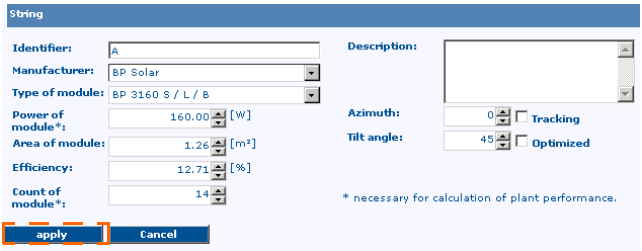
4. Click on "Add String".

The menu for setting a new string opens.



You can define the following settings:

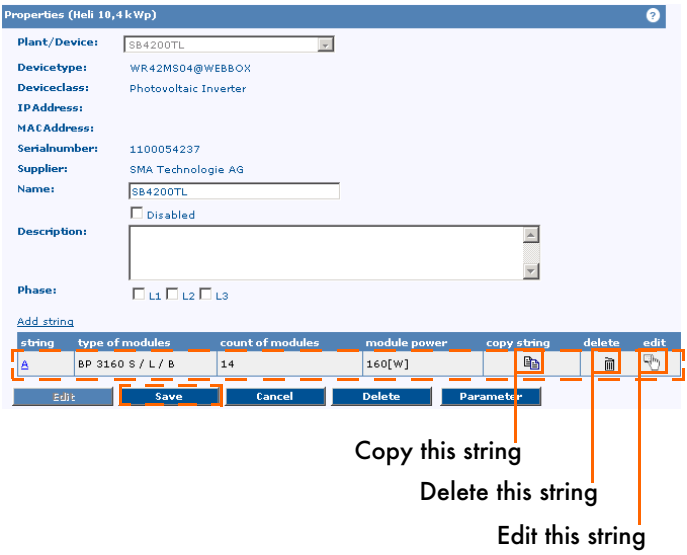
- Designation:
  Enter a name for the string.
- Manufacturer:
  Select information on the module manufacturer from the list.
- Module type:
  Select information on the module type from the list. You must set the manufacturer first. The menu contents vary depending on the manufacturer you select.
- Module output, module surface area, efficiency:
  Entered automatically when you select the module type. You can make adjustments by clicking on the arrows or typing in the field.
- Number of modules:
  Enter the number of modules in the string.
- Description:
  Enter any notes.
- Azimuth:
  Enter the azimuth angle of the string module surfaces.
  The azimuth angle indicates how many degrees the module surfaces deviate from exact southern orientation.
  - Tracking
    If your module surfaces track the sun automatically, select this field.
- Tilt angle:
  Set the title angle of the string module surfaces. The tilt angle indicates how many degrees the module surfaces deviate from the horizontal.
  - Optimized
    If your system is optimized based on the latitude, select this field. The optimum orientation is 30° from the horizontal in Germany.



5. Set all the relevant string data.

6. Click <Apply> to apply the setting for the set string.

The "Properties" page opens again. The set string has been added (see figure below).



7. If you want to add a string, click on the "Add String" link. If you want to create a string, with almost the same data, it makes more sense to copy the string you just created by selecting the "Copy" icon (see figure above) and then edit the copy of the string.
8. Click on <Save> to save your settings once you have finished setting all strings.

9 Service Settings

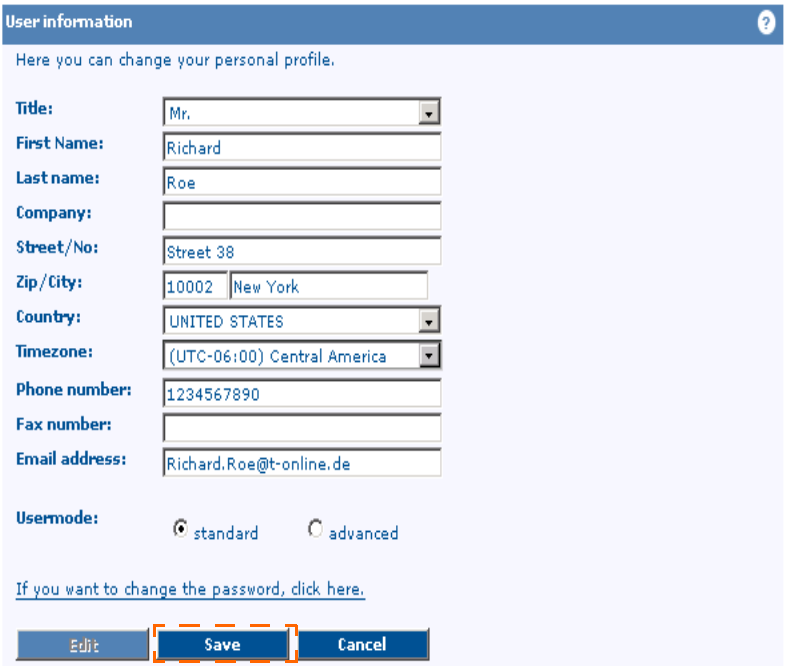
9.1 User Information

The "User Information" page lets you change your address data, go to user mode and change your password.

9.1.1 Changing Address Data

1. Select "User Information/Logout/User Information".
2. Click on <Edit> and alter your address data as desired.
3. Click on <Save> to save the changes.

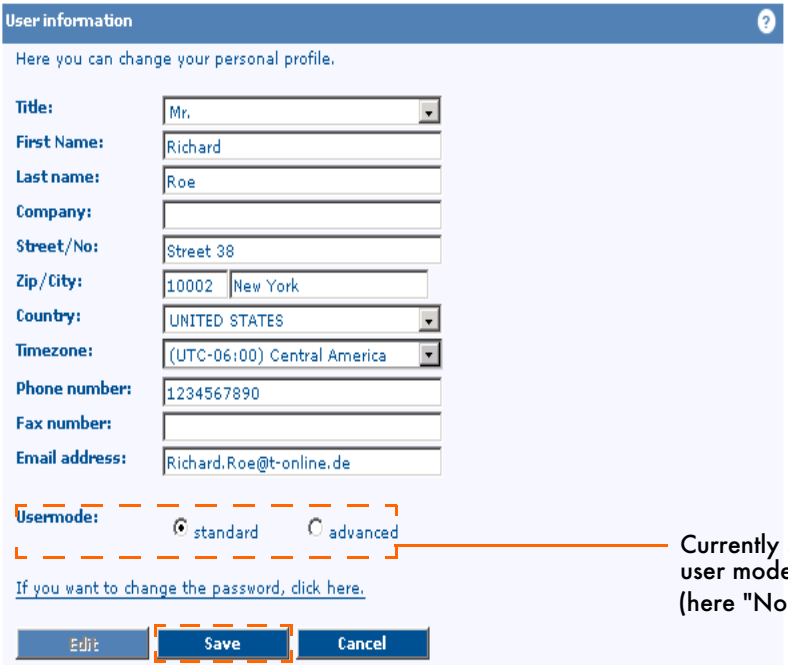
.



9.1.2 Selecting Normal or Expert Mode

Normal mode and expert mode are described in section “Additional Functions in Expert Mode" on page 107. You can select normal or expert mode at your Sunny Portal site as follows:

1. Select "User Information/Logout/User Information".
2. Click on <Edit> to select the user mode.

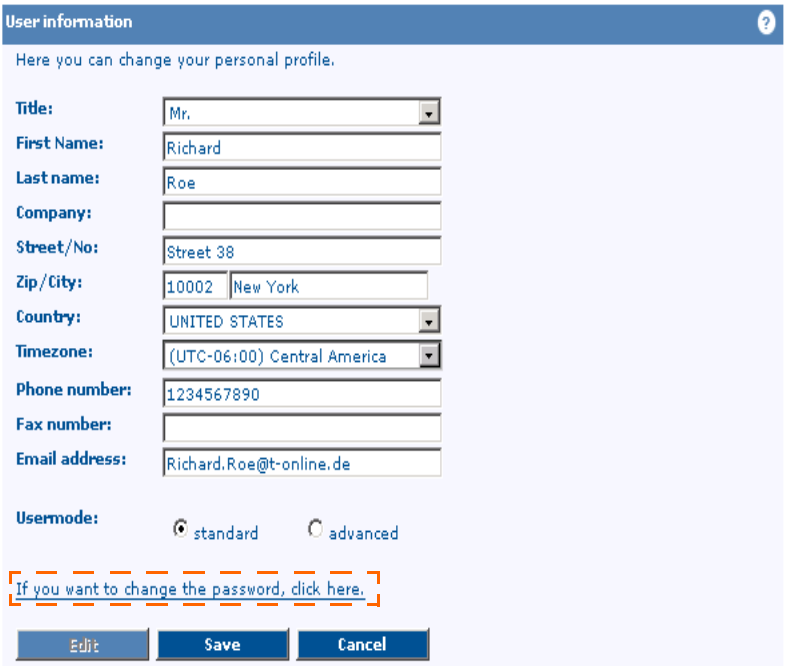


3. Alongside "User mode", click on the radio button to the left of the desired mode ("Normal" or "Expert").
4. Click on <Save>.

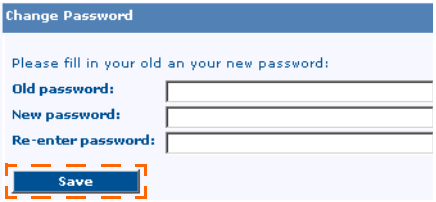
9.1.3 Changing Passwords

You can change the password, which was sent to you by Sunny Portal via e-mail during registration, as follows:

1. Select "User Information/Logout/User Information".
2. Click on the link "Click here to change your password.".



The page for changing the password opens.



3. In the "Old password:" field, type the password with which you have previously logged into Sunny Portal.
4. Type your desired password into the "New password:" field, and type it once more into the "New password (repeat):" field in order to rule out the eventuality that you have made a typing error, which would cause an incorrect password to be saved.
5. Click on <Save>.

9.2 Configuring Reports

You can have reports sent to you from your Sunny Portal site, containing information about your system data. The reports are sent to you via e-mail.

You can set up two info reports (daily, monthly) and three event reports.

- Daily info report
  The following channels can be selected:
  - Daily yield (kWh)
  - Remuneration today
  - Max. output today (kW)
  - CO_2 reduction today (kg)
- Monthly info report
  The following channels can be selected:
  - Monthly yield (kWh)
  - Monthly remuneration
  - Max. output this month (kW)
  - Monthly CO_2 reduction (kg)
- Event reports 1 to 3
  In each of the three event reports, you can select four message types from the portal, from the system, and from service:
  - Information
  - Warnings
  - Failures
  - Errors

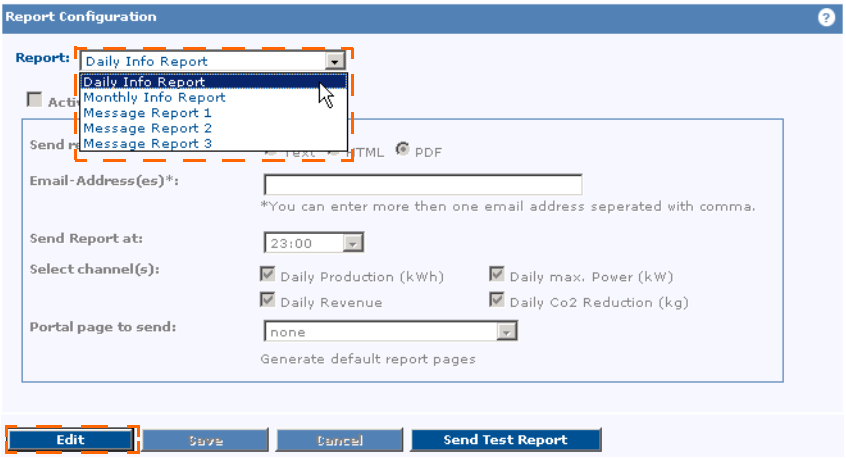
9.2.1 Setting up an Info Report

For the daily and monthly info reports, you can select four channels:

- Yield
- Remuneration
- Max. output
- CO_2 reduction

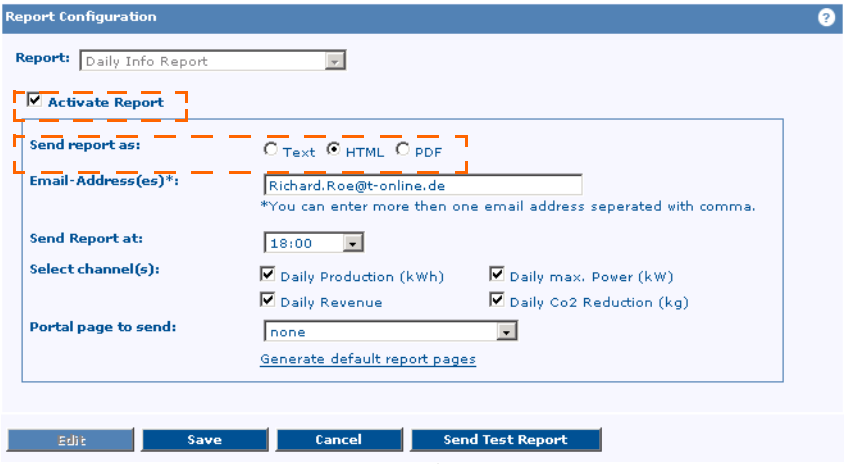
For the daily info report, the channels' data from the respective day is sent; for the monthly info report, the channels' data from the respective month.

1. Select "Configuration / Report Configuration".
2. In the "Report:" drop-down list, select an info report.



3. Click on <Edit>.

The page for setting up the selected report opens.

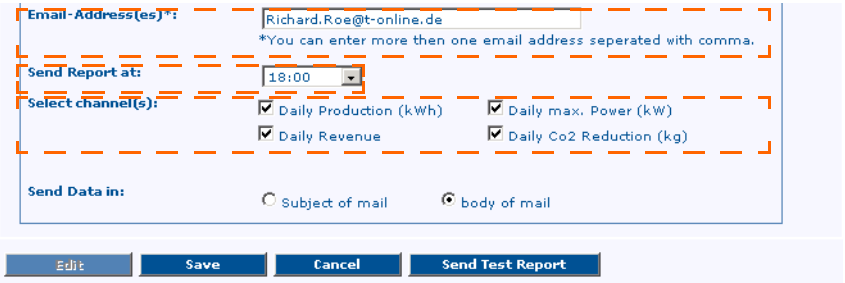


Example: daily info report

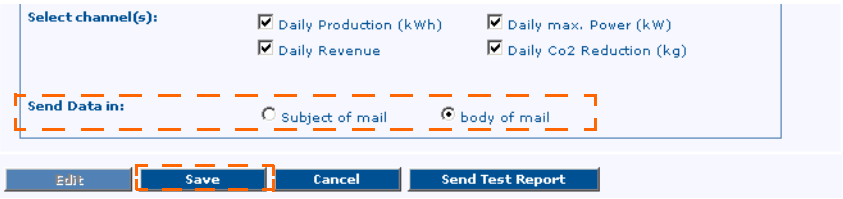
4. If you insert a check mark in the "Activate report" checkbox, the report will be sent at the time which you have specified. If you remove the check mark, no report will be sent. You are, however, able to save the report settings, and activate the report later.
5. Alongside "Send report as:", mark the radio button corresponding to the format in which the report should be sent to you.

You can choose between:

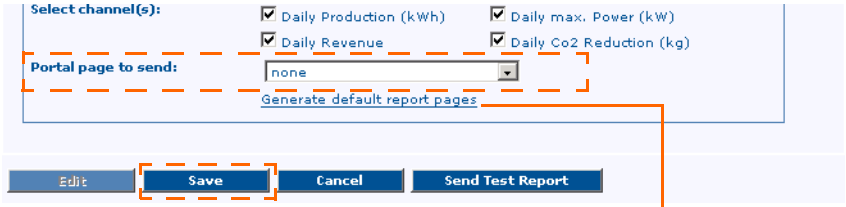
- Text
  You receive the e-mail with the data in text format.
- HTML
  You receive the e-mail with the data in HTML format.
- PDF
  You receive the e-mail in text format, with the data in PDF format as an attachment.



6. In the "E-mail address(es):" field, type in the e-mail address, to which the e-mail should be sent. If you want to send the report to multiple e-mail addresses, separate the e-mail addresses using a comma (example: Sample1@t-online.de, Sample2@t-online.de).
7. In the drop-down list "Send report at:", select the time at which the e-mail should be sent.
8. In the "Channel selection" checkboxes, select the channels which are to be included in the report.
9. Depending on the selected format (text, HTML, or PDF), the following settings are available:
   - Text
     Specify whereabouts in the e-mail the data is to appear by means of the "Send data in:" radio buttons.
     You can choose between:
     - E-mail subject heading
       (The data is shown in the e-mail's subject heading)
     - E-mail content
       (The data is shown in the e-mail)

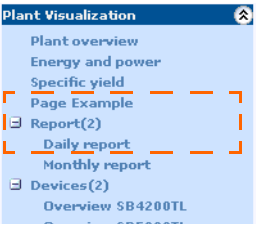


- HTML or PDF
  If you wish to receive one of your Sunny Portal pages along with the e-mail, select the desired page in the "Portal page to send:" drop-down list.



Generates the following standard report pages:
"Daily system report" and
"Monthly system report"

If you want to generate standard report pages, first save your report settings and then click on "Generate standard report pages" to generate the standard pages. You can then select the standard pages for the "Daily system report" and "Monthly system report" from the drop-down list.



10. Click on <Save>. The setup of the report is finished.

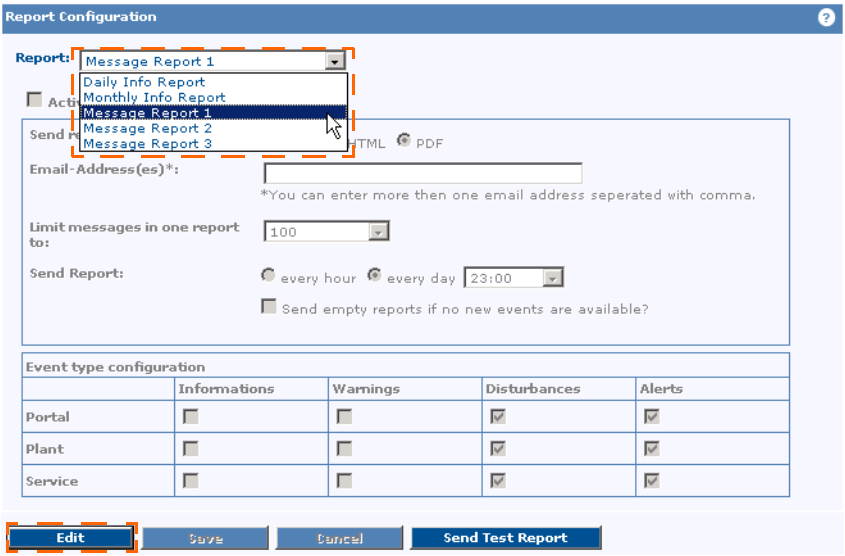
9.2.2 Setting up an Event Report

You can select four message types from the portal, from the system, and from service:

- Information
- Warnings
- Failures
- Errors

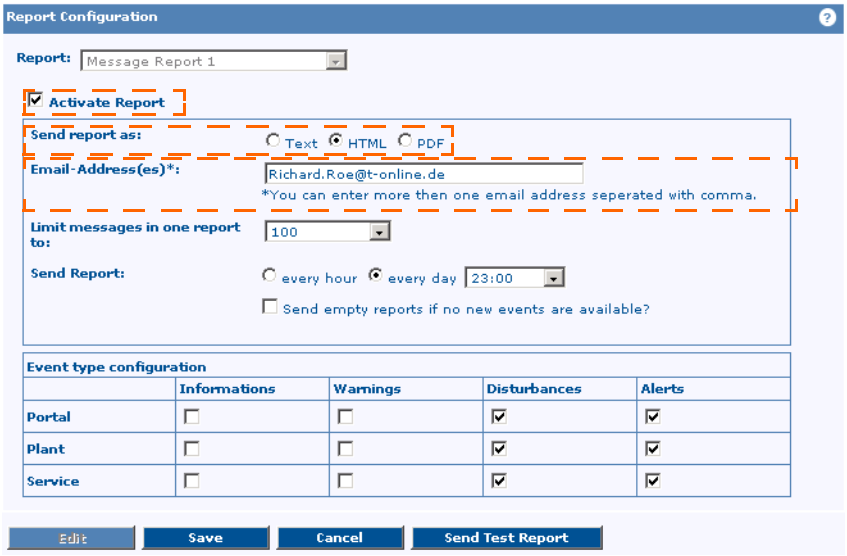
You can set up three event reports which contain different message types.

1. Select "Configuration / Report Configuration".
2. In the "Report:" drop-down list, select an event report.



3. Click on <Edit>.

The page for setting up the selected report opens.

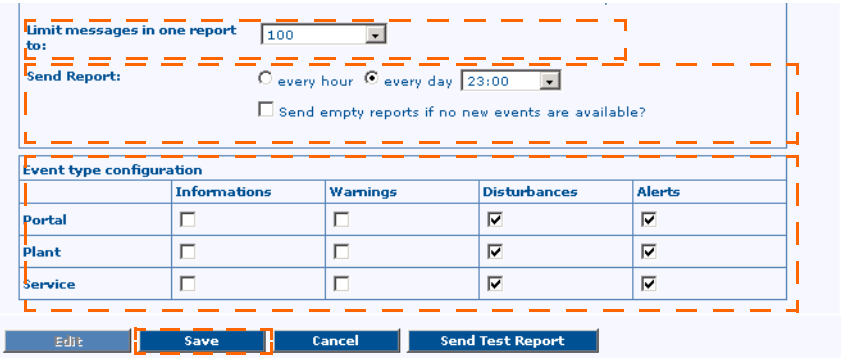


4. If you insert a check mark in the "Activate report" checkbox, the report will be sent at the time which you have specified. If you remove the check mark, no report will be sent. You are, however, able to save the report settings, and activate the report later.
5. Alongside "Send report as:", mark the radio button corresponding to the format in which the report should be sent to you.

You can choose between:

- Text
  You receive the e-mail with the data in text format.
- HTML
  You receive the e-mail with the data in HTML format.
- PDF
  You receive the e-mail in text format, with the data in PDF format as an attachment.

6. In the "E-mail address(es):" field, type in the e-mail address, to which the e-mail should be sent.



7. In the drop-down list "Max. number of messages per report:", select the desired number of messages per report.
8. Specify whether the report is to be sent hourly or daily by marking the corresponding "Send report:" radio button. If you select "Daily", you must also specify the time at which the report is to be sent.
   If you mark the checkbox underneath, empty reports will also be sent to you.
9. In the "Configuration of event types" table, select the desired messages by clicking in the corresponding checkboxes. If a check mark is displayed in a checkbox, the corresponding message has been selected.
10. Click on <Save>. The setup of the report is finished.

10 Additional Functions in Expert Mode

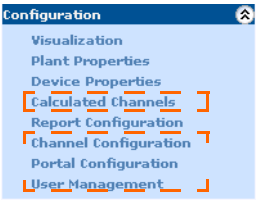
Sunny Portal has a normal mode, and an expert mode. The expert mode includes additional functions in the "Configuration" menu, which are specifically intended for system operators who have expert knowledge. In expert mode for example, you can change the channel settings.

If you make incorrect settings in the additional menus in expert mode, channels will be calculated incorrectly, and system data will be displayed which may have been calculated incorrectly.

In expert mode, the following additional functions are available in the "Configuration" menu:

- Calculated channels
- Channel configuration
- Portal configuration
- User management

Normal mode



Expert mode

To learn how to change modes, see section “Selecting Normal or Expert Mode" on page 96.

10.1 Calculated Channels

The calculated channels are automatically set on the Sunny Portal when you register your solar power system.
Only change the calculated channel settings if you are very familiar with calculated channels and want to carry out special calculations.

In the "Configuration / Calculated Channels" menu, you can set the six virtual channels, which are calculated from the data of other channels.

- Energy
- Remuneration
- CO_2 reduction
- Output
- Specific system yield
- Performance ratio

You can only set the "Performance Ratio" channel when your communication device sends irradiation and temperature sensor data to the Sunny Portal.

For the channels "Remuneration" and "CO_2 reduction", you can also change the value's calculation factor.

The channels are labeled "virtual", because they are calculated from the data of other channels. The data can be calculated from device channels (e.g. E-Total) or calculated channels (e.g. Energy). For example, the "Energy" channel is derived from the data of all the E-Total channels of the system's devices. The CO_2-reduction can be calculated using the data from the "Energy" channel. This is done by simply multiplying the channel value by a configurable factor to produce the CO_2 reduction value.

Example:
E-Total from device 1 + E-Total from device 2 = energy
Energy x factor = CO_2 reduction

Recommendation: configure the virtual channels based on the energy.

10.1.1 Overview

The following virtual channels are available:

- Energy
  The calculated channel "Energy" is the sum of the "E-Total" channels from several inverters. The unit of the "Energy" channel is always "kWh", and cannot be changed.
- Remuneration
  The "Remuneration" channel is the calculated channel "Energy" multiplied by the amount paid per kWh of solar power.

If you use the calculated channel "Energy" to calculate the calculated channel "Remuneration", you must not add any device channels which already provide the calculated channel "Energy" with data. Otherwise, exaggerated values are produced, which do not reflect reality.

- CO_2 reduction
  The "CO_2 reduction" channel is the calculated channel "Energy" multiplied by the value typical of your power-generating country. This value varies from region to region. You can specify the factor for the calculation of CO_2- reduction yourself.

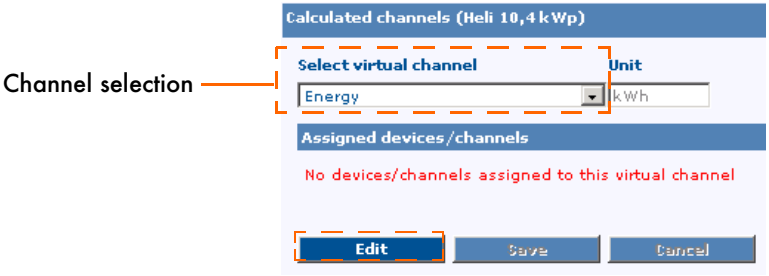
If you use the calculated channel "Energy" to calculate the calculated channel "CO_2 Reduction", you must not add any device channels which already provide the calculated channel "Energy" with data. Otherwise, exaggerated values are produced, which do not reflect reality.

- Output
  The calculated channel "Output" is the sum of the "Pac" channels from several inverters. The unit of the "Output" channel is always "kW", and cannot be changed.
- Specific system yield (kWh/kWp)
  The specific system yield equals the absolute yield (kWh) divided by the peak system yield (kWp). The specific system yield lets you compare different sized PV systems.
- Performance ratio
  The performance ratio refers to the ratio of actual energy yield to the potential energy yield in percent.
  The "Performance Ratio" calculated channel lets you use the irradiation sensor and temperature sensor channels to calculate your system's performance ratio. You can also set a correction factor if you want to use sensor data that affects another orientation or tilt.

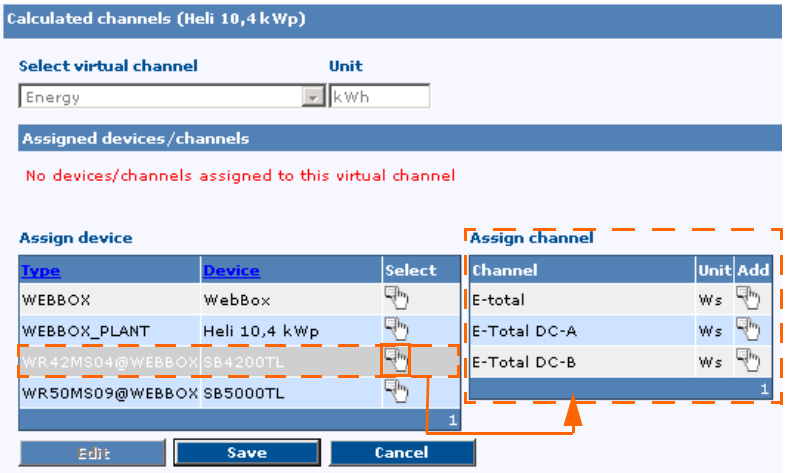
10.1.2 Setting the "Energy" Channel

Further information on the channel can be found in section "Overview" on page 109.

1. Select "Configuration / Calculated Channels".
   The "Calculated Channels" window opens.
2. In the "Channel Selection:" drop-down list, select the "Energy" channel.



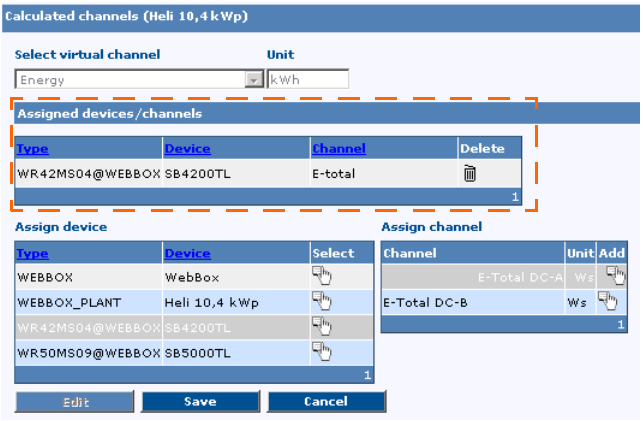
3. Click on <Edit>. The window for setting the channel opens.



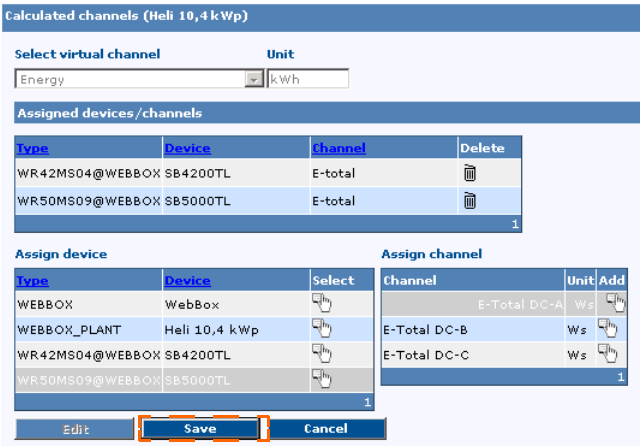
4. In the "Assign device" list, click the hand icon in the row of the device whose channel you want to assign.
   The selected device is marked in dark gray and a list is displayed (see figure above), showing all the device's possible channels that can be added to the calculated channel.

If the list of channels is not displayed for a device, it has either already been assigned to the calculated channel, or does not have a suitable channel for providing data.

5. In the "Assign channel" list, click the hand icon in the row of the device channel you want to assign (see figure above).
   The channel is then displayed in the "Assigned devices / Channels" list (see figure below).



6. Follow the same steps to assign additional devices or device channels.



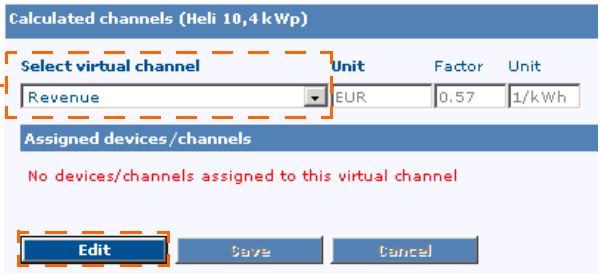
7. Afterwards, click on <Save> to save all settings.

10.1.3 Setting the "Remuneration" Channel

Further information on the channel can be found in section "Overview" on page 109.

1. Select "Configuration / Calculated Channels".
   The "Calculated Channels" window opens.
2. In the "Channel Selection:" drop-down list, select the "Remuneration" channel.

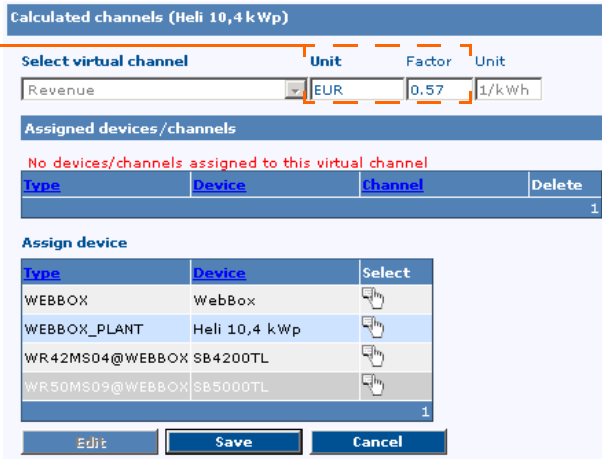
Channel selection



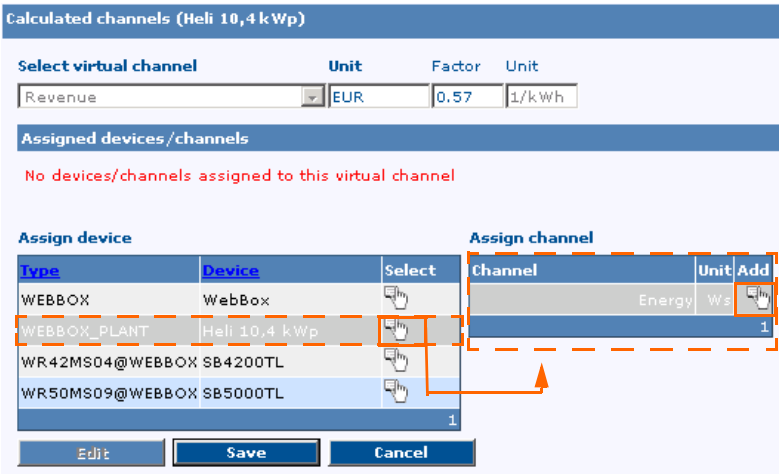
3. Click on <Edit>.

The window for setting the channel opens.

Field for changing the unit and calculation factor



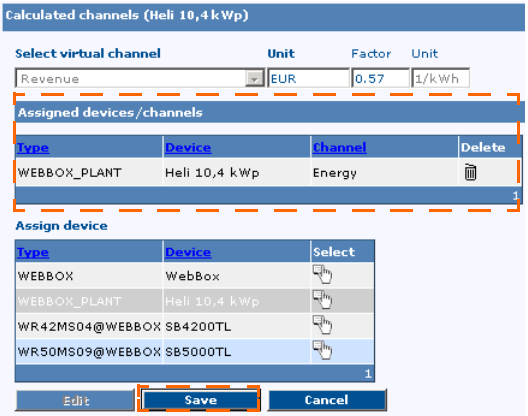
4. You can change the currency unit and factor for calculating remuneration in the "Unit" and "Factor" fields (see figure above).



5. In the "Assign device" list, click the hand icon in the row of the device whose channel you want to assign.
   The selected device is marked in dark gray and a list is displayed, showing all the device's possible channels that can be added to the channel (see figure above).

If the list of channels is not displayed for a device, it has either already been assigned to the calculated channel, or does not have a suitable channel for providing data.

6. In the "Assign channel" list, click the hand icon in the row of the device channel channel you want to assign. The channel is then displayed in the "Assigned devices / Channels" list (see figure to the right).



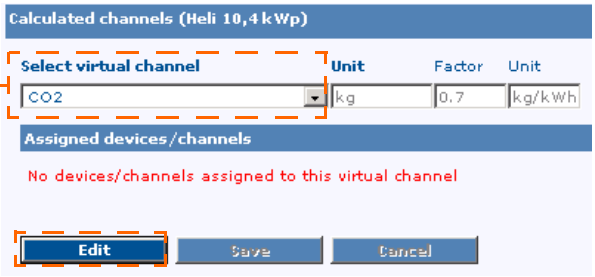
7. Follow the same steps to assign additional devices or device channels. Afterwards, click on <Save> to save all settings.

10.1.4 Setting the "CO_2 Reduction" Channel

Further information on the channel can be found in section "Overview" on page 109.

1. Select "Configuration / Calculated Channels".
   The "Calculated Channels" window opens.
2. In the "Channel Selection" drop-down list, select the "CO2 reduction" channel.

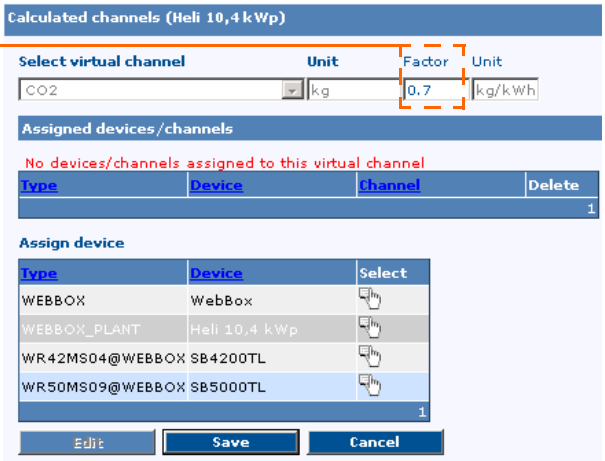
Channel selection



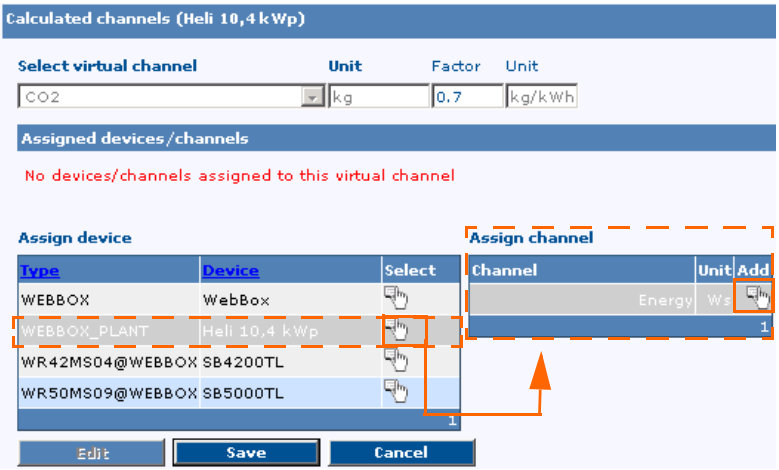
3. Click on <Edit>.

The window for setting the channel opens.

Field for changing/entering the factor for calculating the CO_2 reduction



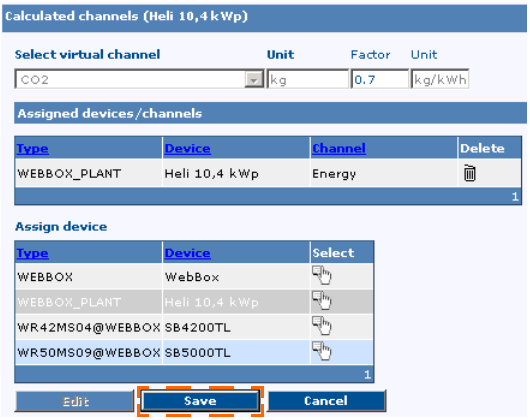
4. Change the factor for calculating the CO2 reduction in the "Factor" field (see figure above).



5. In the "Assign device" list, click the hand icon in the row of the device whose channel you want to assign.
   The selected device is marked in dark gray and a list is displayed, showing all the device's possible channels that can be added to the channel (see figure above).

If the list of channels is not displayed for a device, it has either already been assigned to the calculated channel, or does not have a suitable channel for providing data.

6. In the "Assign channel" list, click the hand icon in the row of the device channel channel you want to assign. The channel is then displayed in the "Assigned devices / Channels" list (see figure to the right).

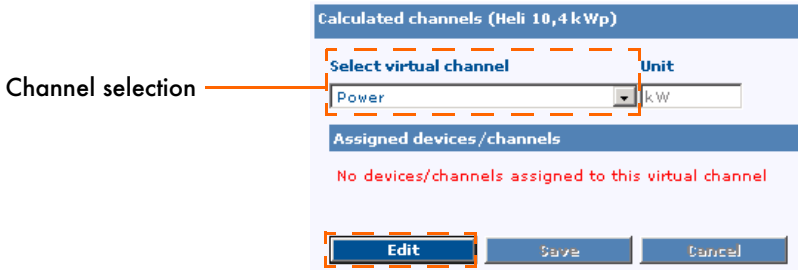


7. Follow the same steps to assign additional devices or device channels. Afterwards, click on <Save> to save all settings.

10.1.5 Setting the "Output" Channel

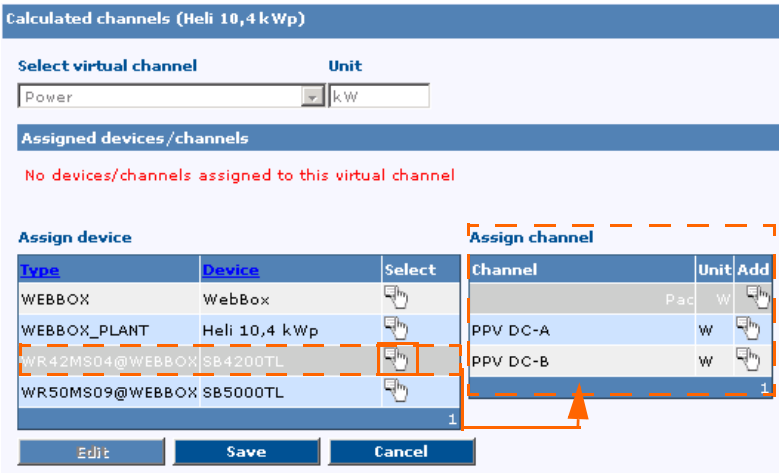
Further information on the channel can be found in section "Overview" on page 109.

1. Select "Configuration / Calculated Channels".
   The "Calculated Channels" window opens.
2. In the "Channel Selection:" drop-down list, select the "Output" channel.



3. Click on <Edit>.

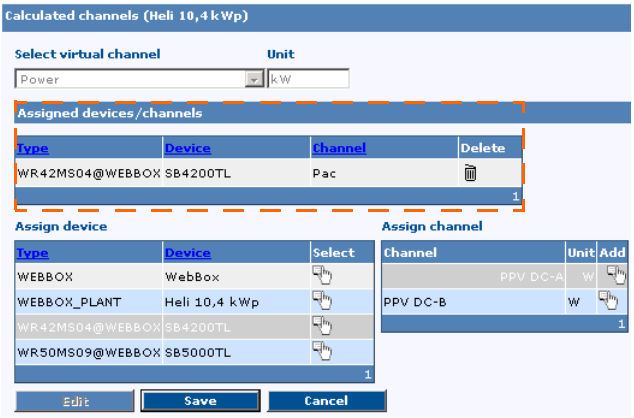
The window for setting the channel opens.



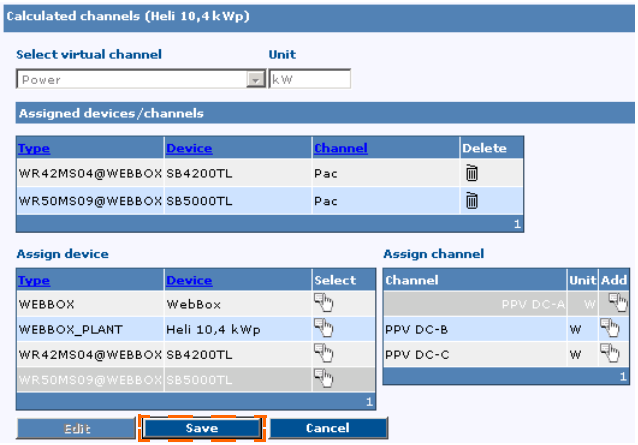
4. In the "Assign device" list, click the hand icon in the row of the device whose channel you want to assign.
   The selected device is marked in dark gray and a list is displayed, showing all the device's possible channels that can be added to the channel (see figure above).

If the list of channels is not displayed for a device, it has either already been assigned to the calculated channel, or does not have a suitable channel for providing data.

5. In the "Assign channel" list, click on the hand icon in the row of the device channel channel you want to assign. The channel is then displayed in the "Assigned devices / Channels" list (see figure below).



6. Follow the same steps to assign additional devices or device channels.

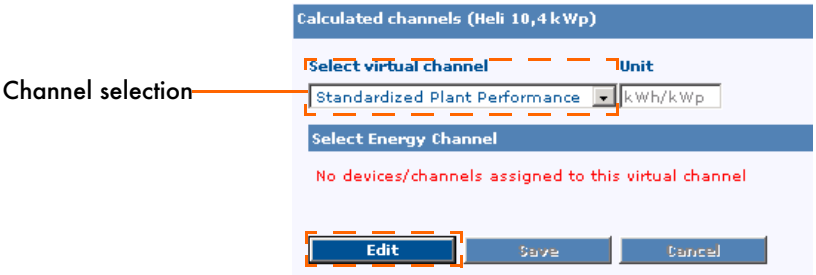


7. Afterwards, click on <Save> to save all settings.

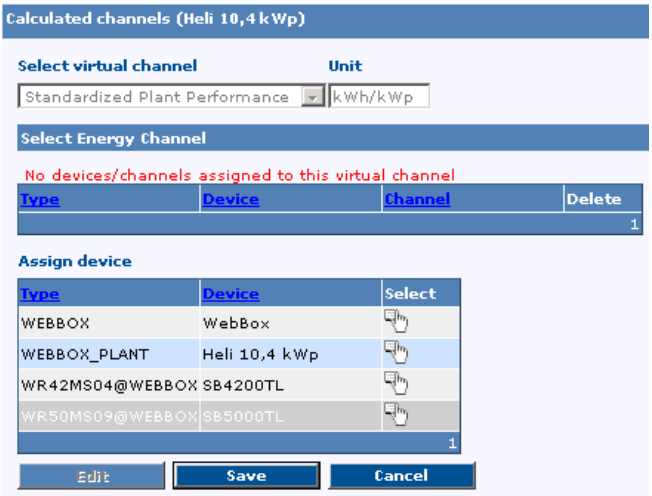
10.1.6 Setting the Specific System Yield

Further information on the channel can be found in section "Overview" on page 109.

1. Select "Configuration / Calculated Channels".
   The "Calculated Channels" window opens.
2. In the "Channel Selection:" drop-down list, select the "Specific System Yield" channel.

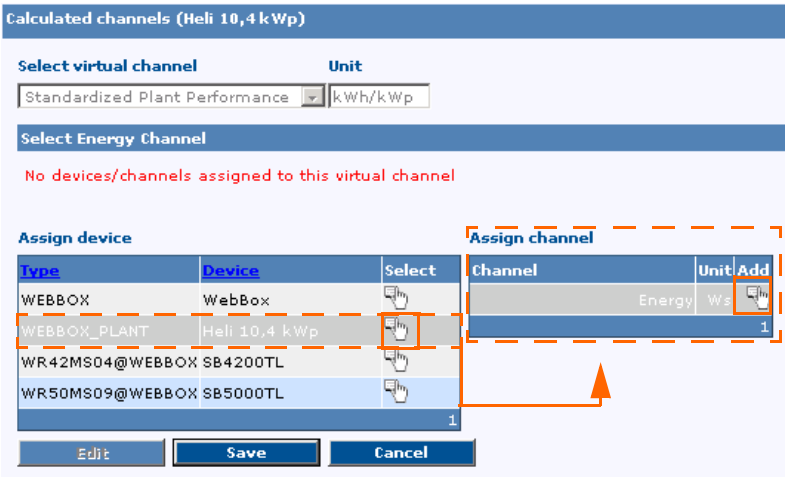


3. Click on <Edit>. The window for setting the channel opens.

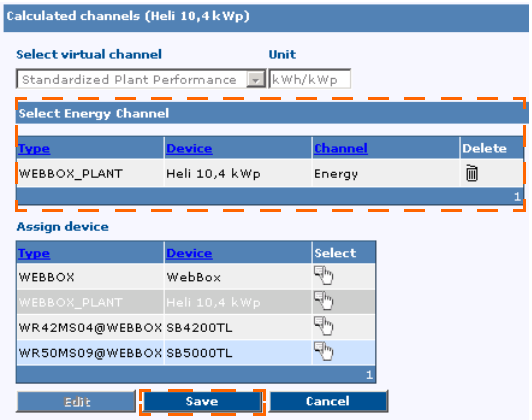


4. In the "Assign device" list, click the hand icon in the row of the device whose channel you want to assign.
   The selected device is marked in dark gray and a list is displayed, showing all the device's possible channels that can be added to the channel (see figure below).

If the list of channels is not displayed for a device, it has either already been assigned to the calculated channel, or does not have a suitable channel for providing data.



5. In the "Assign channel" list, click on the hand icon in the row of the device channel you want to assign (see figure above).
   The channel is then displayed in the "Assigned devices / Channels" list (see figure to the right).



6. Follow the same steps to assign additional devices or device channels. Afterwards, click on <Save> to save all settings.

10.1.7 Setting the Performance Ratio

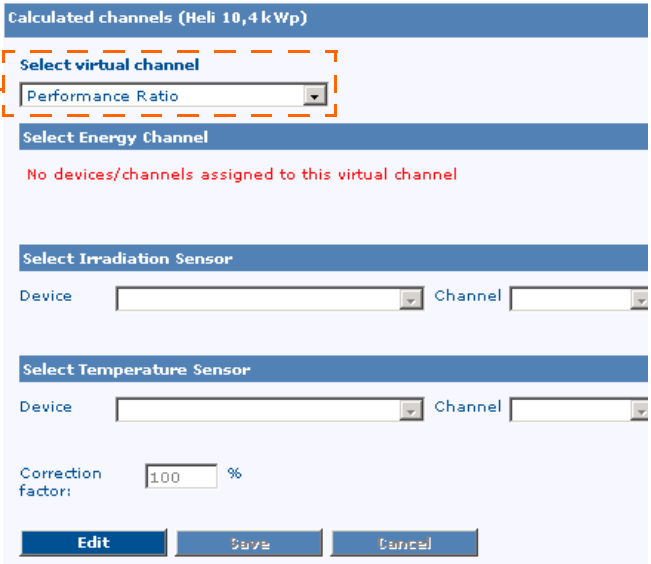
When the first Sunny SensorBox for a system is added to the Portal, the "Performance Ratio" page is generated automatically, and the "Performance Ratio" page is configured automatically.

When you add additional Sunny SensorBox devices for a system to the Portal, the channel list changes or you replace a Sunny SensorBox, the "Performance Ratio" page is not automatically updated. You must update the "Performance Ratio" calculated channel manually.

Further information on the channel can be found in section "Overview" on page 109.

1. Select "Configuration / Calculated Channels".
   The "Calculated Channels" window opens.
2. In the "Channel Selection:" drop-down list, select the "Performance Ratio" channel.

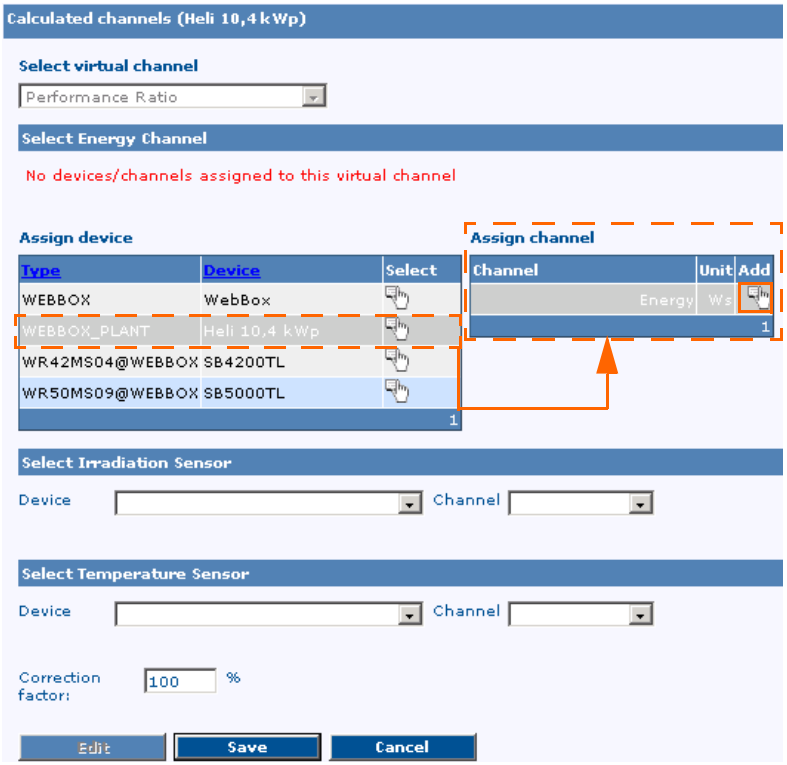
Channel selection



3. Click on <Edit>. The window for setting the channel opens.

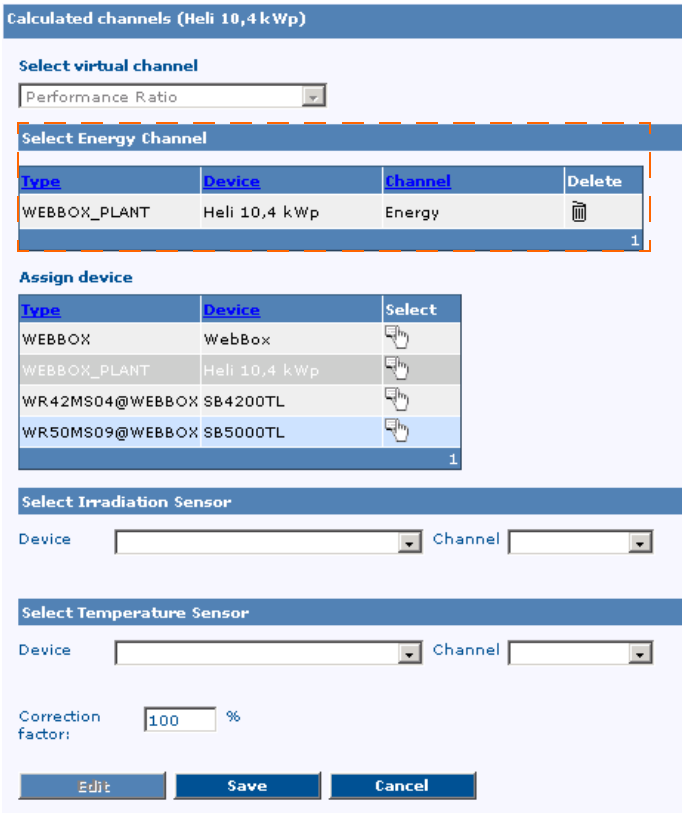
4. In the "Assign device" list, click the hand icon in the row of the device whose channel you want to assign.
   The selected device is marked in dark gray and a list is displayed, showing all the device's possible channels that can be added to the channel (see figure below).

If the list of channels is not displayed for a device, it has either already been assigned to the calculated channel, or does not have a suitable channel for providing data.



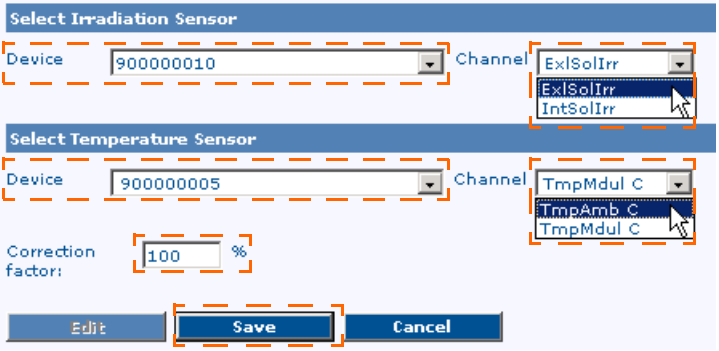
5. In the "Assign channel" list, click on the hand icon in the row of the device channel channel you want to assign.

The channel is then displayed in the "Select Energy Channel" list (see figure below).



Selecting the Irradiation and Temperature sensor

6. In the respective "Device" drop-down list, select the sensor (serial number).
7. In the respective "Channel" drop-down list, select the desired channel.



Setting the Correction Factor

8. If required, enter the correction factor in the "Correction Factor" field (see figure above).
9. Then click on <Save>.

10.2 Configuring Channels

In the "Configuration / Channel Configuration" menu, you can set channels' processing intervals yourself. Sunny Portal then calculates the channels according to the processing intervals, and stores the data for use in diagrams and tables, for example.

Do not remove any established channel processing intervals unless you are certain that the respective channel interval is not being used, for example, for an existing diagram or table on your site.

Sunny Portal automatically defines all required settings on this page as soon as you create a diagram or table. All required data is then automatically processed by Sunny Portal.

You can set the processing intervals for all channels individually or for a group of channels. You can also apply these settings to all devices of the same type.

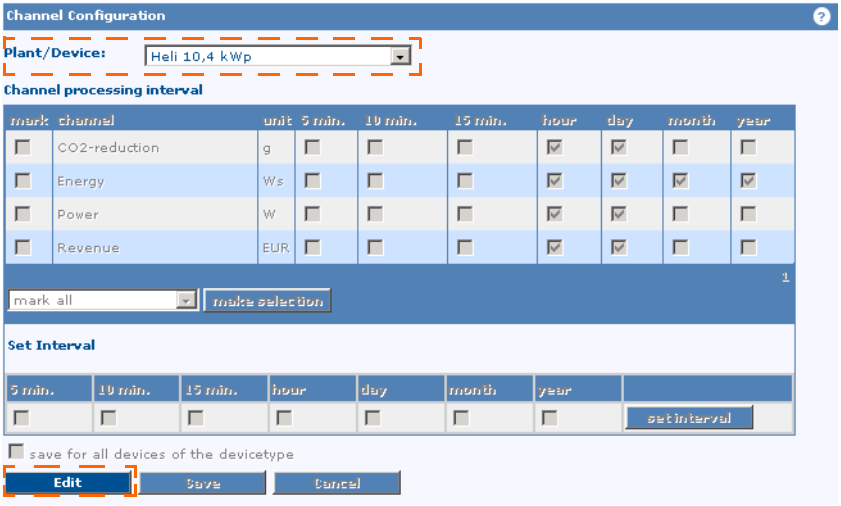
For systems, there are the following virtual channels:

- CO_2 reduction
- Energy
- Performance ratio
- Output
- Yield
- Specific system yield

Devices have additional channels, depending on the device type.

The more values are saved at Sunny Portal, the longer the calculation of the curves takes when visualizing the system. Hence we recommend selecting intervals no shorter than "Hour".

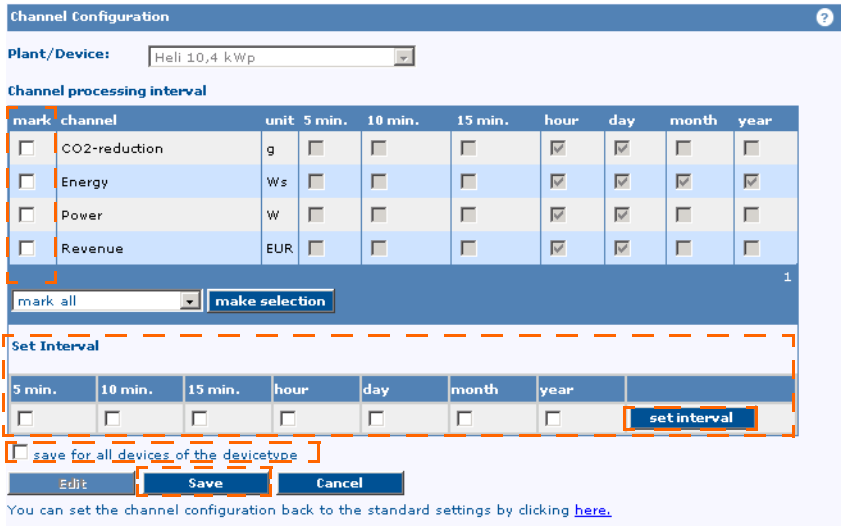
1. Select "Configuration / Channel Configuration".
2. In the "System / Device:" drop-down list, select the system or device, the channels of which you wish to configure. In the example, a system has been selected.



3. Click on <Edit>.

4. Select the desired channels by clicking in the respective channel's checkbox in the "Mark" column. If a channel has been selected, a check mark appears in the checkbox alongside the channel.
5. In the "Set intervals" row, select the desired interval periods by clicking in the checkbox beneath each desired interval. If a checkbox has been selected, a check mark appears inside it.

After saving, the previously set interval periods will be overwritten, and completely reset according to those interval periods which you have selected, as well as those which you have not selected.



If you mark the "Save for all devices of this device type" checkbox, Sunny Portal automatically applies the selected settings to the other devices in the current system which are of the same type.

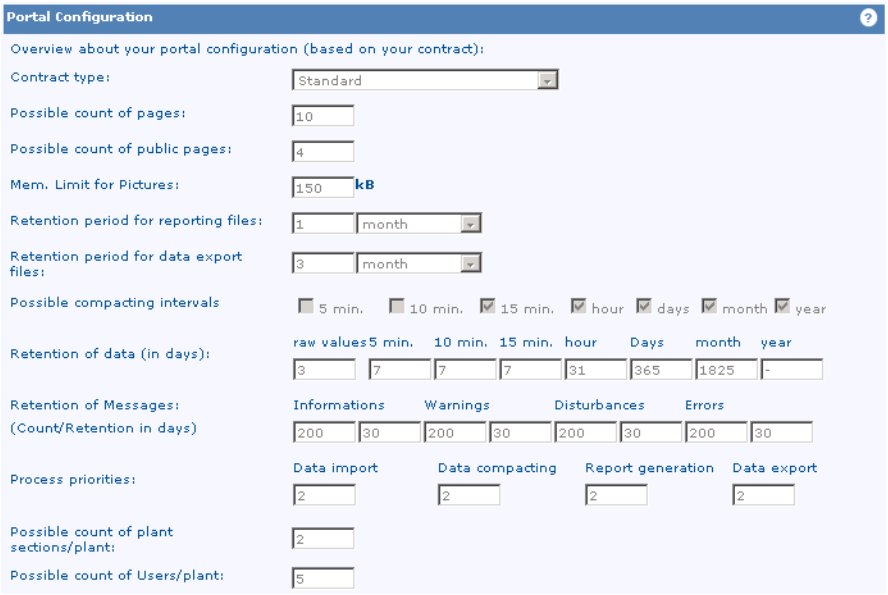
6. Click on <Set Interval> to apply the new intervals to all selected channels. The "Channel processing intervals" list is updated. You can set additional intervals in the same manner.
7. Click on <Save>.

The drop-down list beneath the "Channel processing intervals" table is intended to save you the work of inserting check marks in the "Mark" column.

- Mark all: check marks are inserted in all four checkboxes.
- Mark none: all check marks are removed from the four checkboxes.
- Invert marking: check marks are removed from those checkboxes where a check mark exists, and added to those checkboxes which are empty.

10.3 Portal Configuration

Sunny Portal is free of charge. Upon logging into Sunny Portal, you automatically receive the functions included in the cost-free standard contract. You can call up the functions included in the contract by selecting "Configuration / Portal Configuration".



If you would like additional functions for your Sunny Portal site, please contact SMA Technologie AG.

10.4 User Management

You can create additional users on your Sunny Portal page so they can access your page. The "Configuration/User Management" menu lets you create, edit and delete users.

When you create a new user, the user receives an e-mail indicating that he or she how has access to your Sunny Portal page under this e-mail address. If the new user is not registered on the Sunny Portal, an automatically generated password will be included in the e-mail.

List with all users already created

You can assign roles to users on your Sunny Portal page. Roles differ in the rights the user has to your page, for example, whether the user is authorized to create a new page.

The following roles can be assigned:

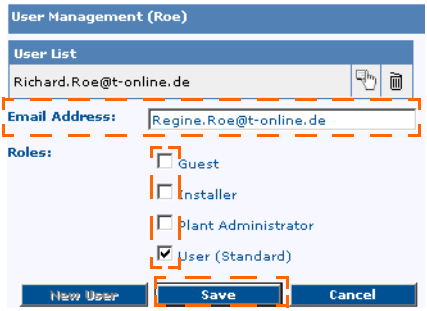
- Guest
- Default user
- Installer
- System administrator

10.4.1 Roles and Rights

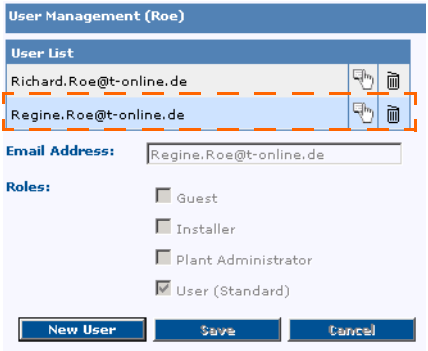
Rights	Roll			
	Guest	**Default user**	**Installer**	**System administrator**
Login	x	x	x	x
View pages	x	x	x	x
View and change user information	x	x	x	x
Changing passwords	-	x	x	x
View system properties	-	x	x	x
View device properties	-	x	x	x
View report configuration	-	x	x	x
View, change and delete pages	-	-	x	x
View and change system properties	-	-	x	x
View and change device properties	-	-	x	x
View and change report configuration	-	-	x	x
View and change calculated channels	-	-	x	x
View system log and confirm entries	-	-	x	x
Import data	-	-	x	x
View portal configuration	-	-	-	x
View user administration	-	-	-	x
Create, delete and assign roles to users	-	-	-	x

10.4.2 Creating a New User

1. Select "Configuration / User Management". The "User Management" window opens.
2. Click on <New User>.
3. In the "E-mail address(es):" field, enter the e-mail address of the user you want to create.
4. Click on the field with the required role. The "Default user" role is always selected by default.



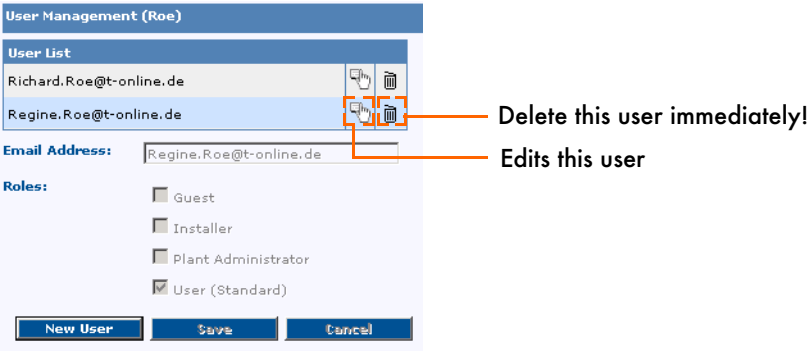
5. Click on <Save> to apply the setting. The new user is added to the list (see figure below).



10.4.3 Changing User Rights

You can assign roles to your Sunny Portal users. Roles differ in the rights the users on your page have (see section “Roles and Rights" on page 130).

1. Select "Configuration / User Management". The "User Management" window opens.



2. To change a user’s rights, click on the hand icon (see figure above) in the row for that user.
3. Change the user’s rights as required.
4. Then click on <Save>.

10.4.4 Deleting Users

You cannot delete your own e-mail address used to log on to the Sunny Portal.

1. Select "Configuration / User Management". The "User Management" window opens.
2. Click the trashcan icon (see figure above) in the row for the user to delete the user immediately.

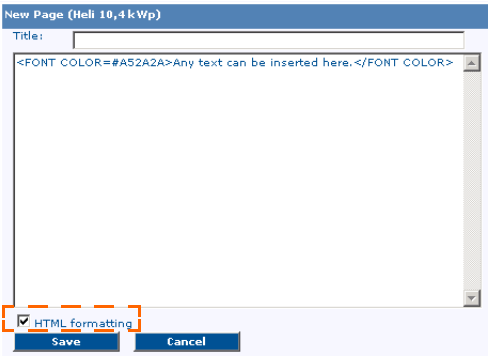
11 Sunny Portal Special: Tips & Tricks

11.1 A Look at HTML

Internet sites are created using the markup language "HTML" (Hypertext Markup Language). On your Sunny Portal site, you can use HTML in the modules type "Text" to set up pages according to your wishes.

To display HTML text for the "Text" module type, select the "HTML Format" field. See the figure to the right.

If you are interested in HTML, we recommend you visit the website www.selfthtml.org.

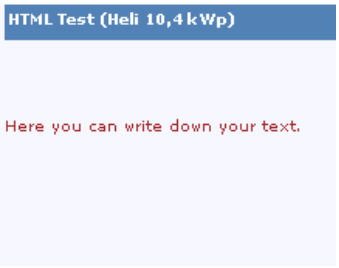


Curious?

Simply copy or write the gray text into the text field with module type "Text", and at the end of the text field, insert a check mark in the "HTML" checkbox (see section "The Text Module Type" on page 31).

Example: colored text (brown)

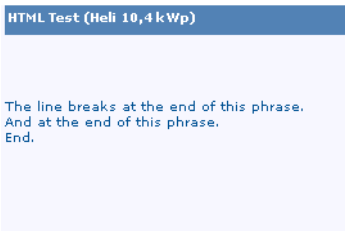
<FONT COLOR=#A52A2A>Here you can write down your text.</FONT COLOR>



Example: line break

Simply write some text in the text field and add the following HTML tag in the places where you want a line break: <BR>.

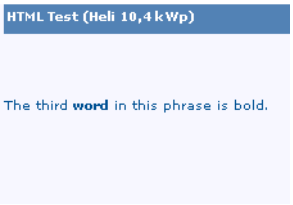
The line breaks at the end of this phrase.
And at the end of this phrase.
 End.



Example: bold text

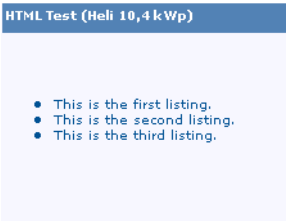
Simply write some text, and insert the following HTML tag before the word which you wish to mark bold: <B>.

The third <B>word</B> in this phrase is bold.



Example: enumeration

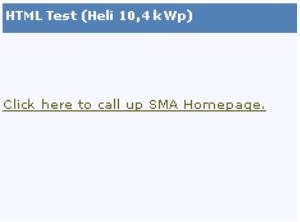
<UL>
<LI> This is the first listing.
<LI> This is the second listing.
<LI> This is the third listing.
</UL>



Example: insert link

You can add a link to another website. In the following example, a link to the website of SMA Technologie AG is added.

<A HREF=http://www.SMA.de>Click here to call up SMA Homepage.</A>



12 Contact

If you have any questions or queries, please contact us. A team of qualified engineers and technicians is at your disposal.

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